Soil Survey Laboratory Data and Descriptions for Some Soils of...

Soil Survey Laboratory Data and Descriptions for Some Soils of...

...COLORADO

August 1967

SOIL CONSERVATION SERVICE U.S. DEPARTMENT OF AGRICULTURE In cooperation with COLORADO AGRICULTURAL EXPERIMENT STATION

5A. Cation-exchange capacity (cont.) 2, NaOAc, pH 8.2 A. Field sampling J. Bicarbonate 1. Site selection a. Centrifuge method 1. Saturation extract 2. Soil sampling 3. Sum of cations a. Acid titration a. Acidity by BaCl₂-TEA, pH 8.2; bases by Nfi₄OAc, pH 7.0 K. Chloride a. Stony soils B. Laboratory preparation
1. Standard (airdry)
a. Square-hole 2-mm sieve 1. Saturation extract a. Mohr titration 5. BaCl₂, pH 8.2 a. Barium by flame photometry b. Potentiometric titration b. Round-hole 2-mm sieve L. Sulfate 1. Saturation extract 2. Field moist B. Extractable bases a. Gravimetric, BaSO₄ 3. Carbonate-containing material 1. NH40Ac extraction 2. NH4OAc extraction 4. Carbonate-indurated material a. Uncorrectedb. Corrected (exchangeable) 2. CONVENTIONS a. Gravimetric, BaSO4 M. Nitrate A. Size-fraction base for reporting 2. KCI-TEA extraction, pH 8.2 1. Saturation extract 1. <2-mm C. Base saturation 1. NH4OAc, pH 7.0 2. NaOAc, pH 8.2 3. Sum of cations a. PDS acid colorimetry 2. <size specified N. Calcium B. Data-sheet symbols I. Saturation extract tr: trace, not measurable by a. EDTA titration quantitative procedure used D. Sodium saturation 2. NH4OAc extraction or less than reportable (exchangeable Na pct.) 1. NaOAc, pH 8.2 2. NH4OAc, pH 7.0 a. EDTA-alcohol separation amount b. Oxalate-permanganate I tr(s): trace, detectable only by E. Sodium adsorption ratio
6. CHEMICAL ANALYSES c. Oxalate-permanganate II qualitative procedure more Fe. Al, and Mn removed. d. Oxalate-cerate sensitive than quantitative procedure used analysis run but none A. Organic carbon 3. NH4C1-EtOH extraction 1. Acid-dichromate digestion a Fash, titration a. EDTA titration 1 ES.

6. CHEMICAL ANALYSES (cont.)

1. SAMPLE COLLECTION AND PREPARATION

PREFACE

This publication is one in a new U.S. Department of Agriculture series established to preserve and make available technical information resulting from soil survey investigations. These investigations have been going on for about two decades. Data from them have been distributed in unpublished form to those immediately concerned. Some of the data and descriptions have appeared in technical journals, in regional bulletins, in USDA technical bulletins, and in the text of published soil surveys. But most were not available to all who might use them.

We intend to publish in this series all data from the soil survey laboratories that form reasonably complete characterizations of soils. Already-assembled data and

descriptions will be published just as rapidly as they can be prepared for printing. Fragmentary data collected as reference points for specific soil surveys will not be included.

While these data were being assembled, there were many changes in laboratory methods. Some were improved and some new ones were devised. Consequently, laboratory data for different soils cannot always be directly compared without allowance for the method.

The method used is indicated by symbol in the column headings of the data table. These symbols are identified in the code sheet on the opposite page. Each method is described in the first number of this series, "Soil Survey Laboratory Methods and Procedures for Collecting Soil Samples," SSIR No. 1.

Ways of describing soils have also changed. Soil descriptions have become explicit on more and more features. The systems for designating horizons and for classifying soils have been changed.

The soil descriptions published here were prepared as working documents to meet a specific need of a soil survey at the time the soil samples were collected. The soil scientists who wrote them had no idea they would be published. Editing has been limited for the most part to that necessary for conformance to the "Soil Survey Manual." Field textural estimates have been retained, even though some are at variance with the laboratory data, because the field estimates themselves are important data.

There were several reasons for sampling these soils. Some were sampled to study soil genesis, some to facilitate classification, and some to obtain data to permit more useful interpretations. Those sampled for genesis or classification studies do not always fit neatly into our present concepts of soil series. Partly because of these studies, our concepts of some soil series have been modified. As a consequence, the soil series name assigned a soil at the time of sampling is not always the name that would be assigned today. Soil series names in this publication follow 1965 series definitions.

Soil Survey Soil Conservation Service

COLORADO

Soil Series	County	Soil Survey No.	Page	Soil Series	County	Soil Survey No.	Page
Ascalon	Morgan	S59Colo-44-1	3	Kuma	Sedgwick	\$63Colo-58-7	129
	Morgan	S59Colo-44-2	5		Sedgwick	\$63Colo-58-10	131
Baca	Baca	855Colo-5-3	7	Laporte	Chaffee	S58Colo-8-9	133
	Baca	\$55Colo~5-4	9	Leal	Grand	S55Colo-25-3	135
	Prowers	S58Colo-50-1	ıí		Grand	S55Colo-25-4	137
	Prowers	\$58Colo-50-10	13	Litle	Arapahoe	S61Colo-3-1	139
*Bancroft	Douglas	S63Colo-18-7	15		Arapahoe	S61Colo-3-2	141
	Douglas	S63Colo-18-8	17	*Lucky	Gunnison	859Colo-26-2	143
Bassel	Chaffee	\$58Colo-8-3	19	Mine	Grand	S55Colo-25-7	145
	Chaffee	S58Colo-8-12	21		Grand	S55Colo-25-8	147
*Bijou	Morgan	S59Colo-44-3	23	Nathrop	Chaffee	S58Colo-8-5	149
•	Morgan	\$59Colo-44-4	25	Nepesta	Provers	\$60Colo-50-9	151
Bobtail	Grand		27	•	Prowers	S60Colo-50-10	153
	Grand		29	Nystrom	Clear Creek	S55Colo-10-1	155
	Grand		31	*Parlin	Gunnison	\$59Colo-26-1	157
	Grand		33	*Penitente	Boulder	S57Colo-7-1	159
	Grand		35		Boulder	S57Colo-7-2	161
	Grand		37	*Peyton	Douglas	S63Colo-18-5	163
Bottle	Grand		39	-	Douglas	S63Colo-18-6	165
	Grand		41	Platner	Morgan	\$59Colo-44-9	167
	Grand		43		Morgan	S59Colo-44-10	169
	Grand	S55Colo-25-2	45	Ptarmigan	Boulder	S57Colo-7-3	171
Bresser	Arapahoe	561colo-3-9	47		Boulder	S57Colo-7-4	173
	Arapahoe	S61colo-3-10	49		Boulder	S57Colo -7- 5	175
Buena Vista	Chaffee	S58Colo-8-7	51		Boulder	S57Colo-7-6	177
	Chaffee	S58Colo-8-10	53		Grand		179
*Buick	Arapahoe	S61Colo-3-5	55		Grand	S55Colo-25-1	181
	Arapahoe	\$62Colo-3-6	57	Rago	Kit Carson	S54Co1o-32-3	183
	Arapaho <i>e</i>	S61Co1o-3-8	59		Kit Carson	\$54Colo-32-4	185
*Cabin	Gunnison	S59Colo-26-4	61	Richfield	Sedgwick	\$63Colo-58-8	187
	Gunnison	S59Colo-26-5	63		Sedgwick	S63Colo-58-9	189
Campo	Baca	\$55Colo-5-1	65		Prowers	S58Colo-50-6	191
	Baca	S55Colo-5-2	67		Prowers	S58Colo-50-7	193
Chubbs	Chaffee	S58Colo-8-6	69	Rocky Ford	Prowers	\$60Colo-50-3	195
	Chaffee	S58Colo-8-8	71		Prowers	S60Colo-50-4	197
Colby	Prowers	S58Colo-50-2	73		Prowers	560Colo-50-7	199
	Prowers	S58Colo-50-3	75	_	Prowers	S60Colo-50-8	201
	Prowers	S60Colo-50-1	77	Stecum	Chaffee	S57Colo-8-4	203
	Prowers	\$60Colo-50-2	79		Chaffee	S57Colo-8-5	205
	Prowers	\$60Colo-50-5	81		Chaffee	\$57Colo-8-6	207 209
	Prowers	S60Colo-50-6	83 85	Tabernash	Grand Grand	S55Colo-25-5 S55Colo-25-6	211
Darling	Grand			***			213
	Grand		87 89	*Tex	Gunnison Gunnison	S59Colo-26-3 S59Colo-26-6	215
	Grand		91	Trout Creek	Chaffee	S58Colo-8-1	217
America 13	Grand	S61Colo-3-4	93	Trout treek	Chaffee	558Colo-8-11	219
*Deertrail	Arapahoe	\$61Colo=3=4 \$61Colo=3=6	95 95	Truckton	Elbert	S61Colo-20-1	221
7947	Arapahoe		97	Truckton	Morgan	S59Colo-44-7	223
Edloe	Chaffee Chaffee	\$57Colo-8-1 \$57Colo-8-2	99		Morgan	S59Co10-44-8	225
	Chaffee	S57Colo-8-3	101	Vasquez	Clear Creek	S55Colo-10-2	227
*Fondis	Douglas	\$63Colo=18-3	103	rabquez	Grand	D//4020 E0 C	229
-Loudiz	Douglas	\$63Colo-18-4	105	Vona	Bent	S61Colo-6-1	231
Haxtun	Sedgwick	\$63Colo=58-3	107	·ona	Morgan	S61Colo-44-1	233
Berenn	Sedgwick	S63Colo-58-5	109	Weld	Arapahoe	S61Colo-3-3	235
	Sedgwick	S63Colo-58-6	111		Arapahoe	\$61Colo-3-7	237
Heath	Chaffee	S58Colo-8-2	113		Kit Carson	\$54Colo-32-1	239
	Chaffee	S58Colo-8-4	115		Kit Carson	S54Colo-32-2	241
*Julesburg	Sedgwick	S63Colo-58-2	117	*Weldona	Morgan	859Colo-44-5	243
	Sedgwick	\$63Colo-58-4	119		Morgan	S59Colo-44-6	245
Keith	Sedgwick	\$63Colo-58-11	121	Wiley	Provers	\$58Colo-50-8	247
*Kettle	Douglas	S63Colo-18-1	123	=	Provers	S58Colo-50-9	249
	Douglas	\$63Colo-18-2	125				
	Douglas	S63Colo-18-9	127				

^{*}Soil series names preceded by an asterisk are names of tentative series.

COLORADO

Arsgahoe Bresser S610clo-3-0 47 Orand Darling 87 87 88 88 88 88 88 8	County	Soil Series	Soil Survey No.	Page	County	Soil Series	Soil Survey No.	Page
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*Buick \$610c1o-3-b 59		*Buick	\$61Colo-3-5			Darling		
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Darling 85			\$550olo - 25-2					
		Darling		85				

SOIL SURVEY LABORATORY Lincoln, Nebr. January 1960

SOIL TYPE Ascalon LOCATION Morgan County, Colorado fine sandy loam

SOIL NOS. S59Colo-44-1 LAB. NOS. 10825-10833

1 1 1	499944444		1EQ#				E DISTRIB			n, C&UI) Mananum	3A1	41007777472277171	**************************************	i
DEF	TH	HORIZON	VERY	COARSE	MEDIUM	FINE	VERY FINE					2A2	TEXTURAL CLASS	
"			SAND	SAND	SAND	SAND	SAND	SILT	CLAY			> 2	CLASS	i
L			2-1	1-0.5	0.5-0.25	0, 25-6, 10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	Q02-Q002	(<19mm	2	
0.	-4	Al	2.8	10.0	10.9	21.9	24.4	20.1	9.9	51.0	6.1	Tr.	fsl	
4.	-7	A3	2.3	9.2	11.6	24.3	23.1	16.3	12.7	47.7	5.8	Tr.	fsl	
7.	_iı	7/27 4	1 7 2	Яn	10.2	22.7	22.7	16 h	17 L	_b7 a	5 2.	_0~	Pel I	

Soil Type: Ascalon fine sandy loam

Soil Nos .: 859Colo-44-1

Field classification: Chestnut-Brown Intergrade.

location: 975 feet west, 825 feet south of north quarter corner, Sec. 1, T6N, R58W, Morgan County, Colorado.

Photo: YE-1F-39.

Continental, average annual precipitation 13-15 inches. Elevation 4,700 feet. Frost-free season 146 days. Mean annual temperature 48° F.

Vegetation: Blue grama, pricklypear cacti, western wheatgrass, few annual weeds.

Parent material: Tertiary outwash. Physiographic position: Upland.

Relief: Gently sloping 3 percent slope. Aspect: Southeast-facing,

Drainage: External drainage medium, internal drainage medium.

Moisture: Moist to 30 inches at time of sampling, near saturation at surface.

Water table: None encountered.

Stoniness: Few small outwash gravels All through Coa. Salt or alkali: None observed other than calcium carbonate.

Erosion: Slight wind and water.

Described by: Clayton F. Spears, May 4, 1959.
Remarks: Site sampled located about 300 feet below crest of short southeast-facing, 3 percent slope. Many

krotovinas of insects and worms AB through Cos horizons.

Horizon and Lincoln Lab. No.

0 to 4 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist and crushed) 10825 fine sandy loam; weak fine granular structure; soft when dry, very friable when moist; noncalcareous;

lower boundary clear and smooth.

AB 4 to 7 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2.5 moist and crushed) 10826 sandy loam; weak medium prismatic structure breaking to weak medium subangular blocks; slightly hard when dry, friable moist; noncalcareous; lower boundary clear and smooth.

B21t 7 to 11 inches. Brown (10YR 5/3 dry) to dark brown (10YR 3.5/3 moist and crushed) light sandy clay

slightly hard to hard dry, friable moist; very thin patchy clay skins on both horizontal and vertical faces of soil aggregates; noncalcareous; lower boundary clear and smooth.

ll to 16 inches. Brown (10YR 4.5/3 dry) to very dark grayish brown (10YR 3/2.5 moist) dark grayish brown (10YR 4/2 crushed) sandy clay loam; moderate medium prismatic structure breaking to moderate medium subangular blocks; a few fine subangular blocks; hard when dry, friable moist; thin continuous clay skins on both horizontal and vertical faces of soil aggregates; noncalcareous; lower boundary clear and smooth B22t 10828

B3 16 to 19 inches. Fale brown (10YR 5.5/3 dry) to brown (10YR 4/3 moist) sandy clay loam; weak 10829 medium prismatic structure breaking to weak medium subangular blocks; slightly hard dry, friable moist; very thin patchy clay skins on vertical faces and in root channels; very slightly calcareous; lower boundary clear and wavy.

19 to 23 inches. Very pale brown (10YR 7.5/3 dry) to ВЗсв brown (10YR 5/3 moist) (1.25Y 5/3 crushed) 10830 sandy loam, very weak coarse subengular blocky structure; slightly hard when dry, friable moist, strongly calcareous; visible lime in seems and streaks and in small soft concretions; moderate horizon of accumulation of calcium carbonate; lower boundary clear and wavy.

23 to 30 inches. Very pale brown to nearly white (10YR 8/3 to 8/2 dry) to pale brown (10YR 6/3 moist Ccal and crushed) sandy loam; massive, very hard to extremely hard when dry, firm moist; very strongly cal-10831 careous; moderate to prominent horizon of accumulated calcium carbonate; lower boundary clear and wavy.

30 to 36 inches. Very pale brown (10YR 8/3 dry, 10YR 7/3 moist) light sandy loam; massive; dry hard, moist friable; very strongly calcareous, few medium soft lime concretions; lower 10832 boundary clear and wavy.

	SOIL	SURVE			Lincoln,				
	SOIL	TYPE	Ascalon	100m	OCATION.	Morgan	County, Color	ado	
	SO	il nos.	S59Co.	10-44-2	LAB.	NOS	10834-108	40	
	*************		<u> 181a - F</u>	ARTICLE-SIZE	DISTRIBUTION	(in mm.) (per			
	DEPTH INCHES	HORIZON CO	RY RSE COARSE ME	DIUM FINE	VERY FINE SAMO SUT	C1 AV	2	TEXTURAL CLASS	
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Soil Type: Ascalon fine sandy loam Soil Nos.: S59Colo-44-2

Field classification: Chestnut-Brown Intergrade.

Iocation: 240 feet south, 1,560 feet west, northeast corner, Sec. 14, T6N, R58W, Morgan County, Colorado.

Photo: YE-1F-50.

Climate: Continental, average annual precipitation 13-15 inches, elevation 4,750 feet. Frost-free season 146 days.

Mean annual temperature 48° F.

Vegetation: Grama, western wheatgrass, annual weeds.

Parent material: Tertiary outwash. Physiographic position: Upland.

Relief: Gently sloping 3 percent slope.

Drainage: External drainage medium, internal drainage medium. Moisture: Moist to 40 inches at time of sampling.

Water table: None encountered. Stoniness: Few small outwash gravels All through Cca.

Salt or alkali: None observed other than calcium carbonate.

Erosion: Slight.

Described by: Clayton F. Spears, May 4, 1959.
Remarks: Numerous small krotovinas in the E2 and B3cs horizons. Sample site located on the lower part of a long

1,000 foot to 1,200 foot northwest-facing slope.

Horizon and Lincoln Isb. No.

0 to 4 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist and crushed) 10834 fine sandy loam; weak coarse crumb structure breaking to weak medium crumbs; soft when dry, very friable moist; noncalcareous; clear smooth boundary.

4 to 8 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2.5 moist and crushed) 10835 sandy loam; weak medium prismatic structure breaking to weak medium subangular blocks; noncalcareous; lower boundary clear and smooth.

8 to 15 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3.5/3 moist) or dark grayish brown (10YR 4/2 R2t 10836 crushed) sandy clay loam; moderate medium prismatic structure breaking to moderate medium subangular blocks; hard when dry, firm moist; moderate continuous clay skins on both horizontal and vertical faces of soil aggregates; noncalcareous; lower boundary clear and smooth.

15 to 21 inches. Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist and crushed) sandy day loam; weak coarse prismatic structure breaking to weak medium and coarse subangular blocks; slightly hard dry, ВЗса 10837 friable moist; very thin patchy clay skins on vertical faces of soil aggregates; strongly calcareous, visible lime in seams and streaks; lower boundary clear and smooth.

21 to 28 inches. Pale brown (10YR 6.5/3 dry) to yellowish-brown (10YR 5/4 moist) or light olive brown (1.25Y 5/3 moist and crushed) light sandy clay loam; very weak coarse prismatic structure breaking to Cca 10838 weak coarse subangular blocks; very strongly calcareous; moderate horizon of lime accumulation with visthle calcium carbonate in streaks and in soft concretions. Lower boundary gradual and smooth.

28 to 38 inches. Hight yellowish brown (1.25Y 6.5/3 dry) to yellowish brown (1.25Y 5/3 moist and 10839 crushed) sandy loam; massive; strongly calcareous, visible calcium carbonate in thin seems and streaks; lower boundary clear and smooth.

38 to 45 inches. Light yellowish brown (1.25Y 6.5/3 dry) to light clive brown (1.25Y 5/4 moist) sandy clay losm; massive; slightly hard dry; very strongly calcareous; visible calcium carbonate in thin seams and streaks. Lover boundary clear and smooth. m 10840

45 to 60 inches. Pale brown (10YR 6/3 dry) to brown (10YR 4.5/3 moist) yellowish brown (1.25Y 5/3 crushed) sandy loam; massive; slightly hard dry; strongly calcareous, few thin seams visible calcium carbonate. Lower boundary gradual and smooth. C3

60 to 94 inches. Hight yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) loamy sand; massive; slightly hard dry; strongly calcareous, few thin seams visible calcium carbonate; some stratification with sandy loam material. Lower boundary abrupt and smooth. C4

94 inches plus. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) shale; distinct mottles of bright yellowish brown (10YR 5/6 5/8).

Bureau of Public Roads Samples:

Q-4 inches All

 $\mathbf{n}_{\mathbf{t}}$ 8-15 inches

 α 28-38 inches

	SOIL SURVEY LABORATORY Lincoln, Neor. 12/21/56	
	SOIL TYPE Baca LOCATION Baca Co., Colorado clay loam	
	SOIL NOS. S-55-Colo-5-3 LAB. NOS. 3527-3534	
	181a PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent) 3A1	
	DEPTH INCHES HORIZON COARSE COARSE SAND SAND SILT CLAY 242 TEXTURAL CLASS	
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Soil Type: Baca clay loam

Location: 230 feet east of the northwest corner of Sec. 5, T325; R48W; Baca County, Colorado.

Date of Sampling: October 1, 1955

Collector: A. J. Cline Described by: A. J. Cline

Physiographic Position: Upland

Topography: Gentle convex slope of approximately 3 percent facing south.

Drainage: Well drained

Vegetation: Blue grams, Buffalo grass and Russian thistle

Use: Pasture

Soil Mos.: 855Colo-5-3

Lincoln Laboratory Nos.: 3527-3534

0-5 inches Al

Grayish brown (10YR 5/2.5 dry) to very dark grayish brown (10YR 3.5/2.5 moist) light silty clay loam; soft when dry, very friable when moist; moderate, fine granular structure; noncal careous; lower boundary clear

LHL 3527 and smooth.

5-8 inches B21t

Brown (10YR 5/3 dry) to dark grayish brown (10YR 4/2.5 moist) silty clay loam; slightly hard when dry, friable when moist; weak to moderate, medium and fine prismatic structure breaking to moderate, fine, angular and sub-

3528

angular blocks; noncalcareous; moderate continuous tonhautchen; lower boundary clear and smooth.

8-15 inches B22t

Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) silty clay loam; slightly hard to hard when dry, friable when moist; moderate to strong, medium prismatic structure breaking to moderate to strong, fine and very fine, angular and subangular blocks; weakly calcareous; thin

3529

nearly continuous tonhautchen; lower boundary gradual

and smooth.

15-2h inches B31ca

Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) silty clay loam; hard when dry, friable when moist; moderate to strong, medium prismatic structure breaking to moderate to strong, medium and fine, subangular blocks; strongly calcareous; this is a moderate lime

LSL 3530

- - - -

horizon containing moderate numbers of large soft calcium carbonate concretions 1/4 to 1/8 inch in diameter;

there are a few thin patchy tenhautchen on vertical

21-31 inches B32ca

LSL 3531 Pale brown (10YR 5.5/3.5 dry) to yellowish brown (10YR 4.5/4 moist) silty clay loam; very hard when dry, friable when moist; moderate, coarse subangular blocky structure; strongly calcareous; this is a moderate lime horizon and contains moderate numbers of large soft calcium carbonate concretions 1/4 to 1/8 inch in diamoter; there are a few thin patchy tonhautchen; lower boundary gradual and smooth.

31-44 inches Cca

LSL 3532

Pale brown (10YR 5.5/3 dry) to brown (10YR h.5/3 moist) light silty clay loam; hard when dry, friable when moist; weak, coarse subangular blocky structure; violently calcareous: this is a moderate to strong lime

SOIL SURVEY LABORATORY Lincoln, Nebr. 12/21/56

SOIL TYPE Baca LOCATION Baca Co., Colorado clay loam

Soil Nos. S-55-Colo-5-4 LAB. NOS. 3535-3541

		181					UTION (in			3 A 1		
DEPTH INCHES	HORIZON	SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			> s SV5	TEXTURA CLASS
		2-1	1-0.5		0.25-0.10			< 0.002	0. 2-0. 32	002-0002		
0-5	Ago	1.1	1.7	0.8	1.2	8.9	5 1.9	34.4	40.1	21.4		sicl
5-10	B21t	0.4	0.5	0.3	0.5	6.5	50.3	41.4	36.1	21.1	-	sic
10-15	B22t	0.2	0.2	0.2	0.5	4.7	50.4	37.8	33.1	28.3	~	sicl
16-30	ВЗса	0.2	02	0.2	0.4	4.8	61.1	33.1	35.6	30.6	-	sicl
30-42 42-56	Cca. ABb	0.3	0.3	0.2	0.3	5.3	64.8	28.8	38.5	31.8		sicl
42-50 50-64+		0.6	1.0 2.2	1.5	0.9	5.0 7.2	58.7 48.6	32.0 37.8	ვნ.2 34.მ	27.0	-	sicl
JU-U41	DEU	1.0	E.E	1.7	1.1	1.2	40.0	31.0	34.0	21.9	-	sicl
	24	8 01.a	ORG	ANIC MA			ELECTRI-	6ela	49 (41 km 1900 1 e 1 4 b			NSIONS
			6Ala	6Bla		EST% SALT	CONDUC-	CoCOs	GYPSUM			4B2
	1:5	1:10	CARBON	NITRO- GEN	C/N	SALT (BUREAU CUP)	EC-103 MILLIMHOS	equiv-	me./100g. SQIL	I/IO ATMOS.	1/3 ATMOS.	15 ATMOS.
1:1			*	75			PER CM	*		٠.	%	*
7.8	8.2	8.5	0.68	.101	9	*******		1				15.5
7.3	7.7		0.87	.096	9			-				19.5
7.7	8.4		0.74	.೦೦೩	9			13	i			16.8
8.4	8.9		0.42	.045	9			11				15.4
8.3	8.9		0.27	.030	5		į	8	ĺ			15.3
8.1	8.7		0.20	.028			•	5	1			15.0
8.0	8.6	8.8	0.18	.027				4				15.8
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XCHANGE PAPACITY NH4Ac	Ce	Mg millionuly	H alents per	No 100a sai	K	-	Ng	K	velents p	n liter		SATU- RATION
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27.1		6.1		0.1								

Soil Type: Baca clay loam Location: 650 feet west of the northeast corner of Sec. 3; T298, R48W, Baca County,

Colorado.

Date of Sampling: October 4, 1955

Collector: A. J. Cline Described by: A. J. Cline

Topography: Very gently sloping slightly convex surface facing east; approximately 1-2 percent slope. Drainage: Well drained

Vegetation: Winter wheat Use: Tilled field

Soil Nos.: 855Colo-5-4

Lincoln Laboratory Nos.: 3535-3541

0-5 inches Light brownish gray (10YR 6/2.5 dry) to dark grayish brown (10YR 4/2.5 moist) light silty clay loam; soft Ap when dry. very friable when moist; moderate, fine

LSL 3535 granular structure; noncalcareous; lower boundary abrupt and smooth.

5-10 inches Grayish brown (10YR 5/2.5 dry) to dark grayish brown B_{21t} (10YR l/2.5 moist) silty clay loam; slightly hard when dry, friable when m-ist; moderate, fine prismatic LSL 3536 structure breaking to moderate to strong, fine and

very fine, angular and subangular blocks; noncalcareous; moderate continuous tonhautchen; lower boundary clear

and smooth.

Light brownish grav (10YR 6/2.5 drv) to gravish brown 10-16 inches

SOIL SURVEY LABORATORY Lincoln, Nebr. May 1959

SOIL TYPE Baca LOCATION Provers County, Colorado

SOIL NOS. S58Colo-50-1 LAB. NOS. 9667-9674

48M=4992F4+7 f44444	 	1	Bla	PARTI			UTION (in					
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURAI CLASS
		2-1	1-0.5	0.5-0.25	0, 25-0, 10	0.10-0.05	0.05-0.002	< 0.902	0.2-0.02	0.02-0.002		
0-2	Alp	0.3	1.4	1.4	4.5	26.3	37.8	28.3	54.6	12.7	-	cl
2-6	B2t	<0.ĭ	0.5	0.6		16.0	41.3	39.4	45.1	13.9	-	sicl
6-11	B2ca	<0.1	0.3	0.4	1.2	9.1	52.8	36.2	38.9	23.9	-	sicl
1 <u>1</u> -18	ВЗса	0.1	O.la			8.0a	59.7	31.4	42.0	26.1	-	sicl
18-26	Сса	<0.1	<0.1	<0.1	0.4a	7.6a	64.0	28.0	45.8	26.1	-	sicl
26-33	C1	<0.1	<0.1	<0.1	0.4a	8.4a	70.3	20.9	47.9	31.1	-	sil
33-44	C2	<0.1	<0.1	<0.1	0.4a	9.3a	73.3	17.0	53.3	29.6	-	sil
¥4-60	C3	<0.1	<0.1	<0.1	0.4a	8.8a	73.7	17.1	52.5	30.3	-	sil
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8cla	1:5	1:10	6Ala Organic Carbon	6Bla NITRO- GEN	C/H	EST% SALT (BUREAU CUP)	CONDUC- TIVITY EC × 103 MILLIMHOS	CaCO3	GYPSUM me/100g. SOIL	1/10 ATMOS.	1/3 ATMO5.	4B2 15 atmos.
1:1			%	%			BALA	96	<u> </u>	%	%	%
7.9			0.96	0.098	10	<0.20	0.7	1				11.7
7.7			0.83	0.097	8	<0.20	0.5	î				16.2
7.9]		0.65	0.075	9	<0.20	0.5	6	į			16.0
8.1		Ì	0.42	0.052	8	<0.20	0.5	11	ĺ			13.9
8.2		<u>.</u>	0.31	0.038	8	<0.20	0.5	12	į	į		12.7
8.4		į	0.24	1	Ì	<0.20	0.7	10	1	Ì		11.8
8.3			0.19		•	<0.20	1.3	8		1	<u> </u>	10.8
7.8			0.19			0.46	6.7	6				10.7
			ļ		} }	************	***************************************		***************************************		<u>.</u> 	
5Ala	ļ	EXTRAC	TABLE	CATIONS	. 581a.	5 12 2	8A1SATU					8A
CATION XCHANGE	6 N2 b	602b	6Hla	6P2s	6 92a		6Pla	6Qla	6Ла	6кла	6IJa	MOISTUR ATU-
APACITY	Co	Mg	Н	No	K	EXCH.	Na	K	HCO3	CJ.	50 <u>T</u>	RATIO
NH ₁ Ac	 -	millequiv	alents per	100g. sol	·	No %		milliegu	ivalents p	es liter	;	%
17.7		3.2	<0.1	<0.1	1.8	a	0.4	1.0	į	ļ		52.1
22.7	20.8	5.6	0.8	0.1	1.2	ā	0.4	0.3	İ		Ì	64.8
20.2		1		0.1	0.9	a	0.6	0.2	•			64.9
17.2		I	į	0.3	0.8	1	1.2	0.3	Ī			61.0
16.1	Ì	l	Ì	0.7	0.9	4	2.6	0.3		į		57.2
16.3	ļ		1	1.4	1.1	7	4.3	0.3	İ	Į	į	51.8
16.0		1		2.1	1.1	11	8.1	0.4		İ.		52.8
16.8	į	į	1	3.4	1.1	10	32.0	1.3	1.6	47.9	20.4	53.9
	1	į			į		į	1	1	1	Į.	
		1		1		: 1		1	İ	1	1	1
		İ		į	į		1			Ì		Ì
	1	i	i	i	<u> </u>	<u>.</u>	i	<u> </u>	<u>.</u>	i	<u>I</u>	<u> </u>

Soil Type: Baca Loam Classification: Brown

Location: 3 mile E., 0.5 mile S., NW corner of Section 5, T21S., Rh6N,

Prowers County, Colorado.

Date Sampled: November 4, 1958 Climate: Continental climate, average annual precipitation 13.00 inches,

elevation 3,860 feet. Frost-free season 160 days.

Vegetation: Dryland, wheat, Parent Material: Loss.

Physiographic position: Upland. Relief: Nearly level, 0-1%. Drainage: Well Moisture: Dry, slightly moist below four feet. Watertable: None encountered. Stoniness: Mone. Salt or Alkali: None observered other than calcium carbonate.

Erosion: Slight to moderate wind erosion.

Soil Nos. S-58-Colo-50-1 Described by: E. Milton Payne

Lincoln Horizon

Iab. No.

9667 Ap 0-2 inches

Brown (10YR 5/3, dry) to dark grayish brown (10YR 4/2.5 moist) (10YR 4/2 moist crushed) loam; weak coarse platy breaking to weak fine granular structure; soft when dry, very friable moist; slightly calcareous; clear wavy boundary.

9668 B_{2t} 2-6 inches

Brown (10YR 4/3 dry) to dark brown (10YR 3.5/3 moist) and crushed silty clay loam; moderate medium prismatic structure breaking to moderate medium to fine subangular blocky structure hard when dry, friable moist; thin continuous clay skins; noncalcareous; in the pit there was some disturbance of the upper portion of the horizon and platiness or a plow pan from cultivation was in evidence; gradual smooth boundary.

9669 B 6-11 2ca inches Brown (10YR 5/3 dry) to dark brown (10YR h/3 moist) dark grayish brown (10YR h/2.5 moist crushed) silty clay loam; moderate fine prismatic structure breaking to moderate medium subangular blocky structure; hard when dry, firm moist; thin continuous clay skins; strongly calcareous with a very few small lime nodules in evidence, otherwise the lime was well disseminated; clear smooth boundary.

SOIL SURVEY LABORATORY Lincoln, Nebr. May 1959 SOIL TYPE Baca LOCATION Provers County, Colorado

SOIL NOS. 9718-9725

			DA		7-5-512		UTION (in	2222 76	7.2227	3A1	040	į
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURA CLASS
		2-1	1-0.5	0,5-0,25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	Q02.Q002	-	
0-3	Ap	0.1	0.9	1.0	2.7	22.1	42.8	30.4	53.9	12.9		cl
3-6	B2t	0.1	1.1	1.1	2.5	17.6	41.2		47.0	13.6	-	cl
6-13	B2ca	0.2	0.5	0.6a			50.3	37.5	40.3	20.5	_	sicl
13-18	В3са	0.1	0.1	0.la			57.9	33.4	42.3	23.9	-	sicl
18-25	Сса	<0.1	0.1	0.la	:		60.6		45.2	23.9	-	sicl
25-36	Cl	0.1	0.1	0.1b			65.3	25.3	67.7	26.6	-	sil
36-45	C2	<0.1	<0.1	0.la	, ,		69.9		51.5	27.9	-	sil
45-60+	C 3	<0.1	<0.1	<0.1	0.5a		72.1	17.8	52.7	29.4	-	sil
					·	-	·	·				-
*************	******************	445011111111111111111111111111111111111		/=#=##################################	9900900111191123333	4 MILEON 1-2556 4444444	**************	***************************************	1000041111111111	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	** -*********	
	pН		ORG/	NIC MA		8A2	ELECTRI-	6ELE	1		URE TE	
8Cla			6Ala	6Bla		EST% SALT	CONDUC-	CoCO3	GYPSUM			4382
			ORGANIC		-4.	(BUREAU	EC = 103	equiv-	me./100g.		1/3	15
	1:5	1:10	CARBON	GEN	C/N	CUP)	M'LLIMHOS PER CM		SOIL	ATMOS.	ATMOS.	ATMOS.
1:1			%*				. BALS	%			- %	*
7.9			0.96	0.108		<0.20	1.0	1			:	11.4
7.9			0.94	0.104		<0.20	0.7	1				14.2
7.9			0.84	0.096	9 8	<0.20	0.7	5				15.4
3.0			0.48	0.061		<0.20	0.7	10	•			13.9
8.1			0.38	0.044	9	<0.20	0.7	12				12.7
8.3			0.26			<0.20	0.8	10				111.8
8.5			0.19			<0.20	0.8	9				11.1
8.2			0.16			<0.20	1.5	6		İ		10.3
										i		
# 43	***********	EXTRAC	TABLE	CATIONS			8A1SATU	RATION	EXTRAC	T SOLU		8a
SALE CATION			1 7			5 12 2	6Pla		ſ			MOISTUR
XCHANGE APACITY		602b	6на	6P2a	602a			6Qla K	Ī.	Į		SATU-
NHD Ac	Ça	Mg	H	Na	K	EXCH.	Na	-		•		RATIO
- There		milliequiv	alents per	100g, sai		5		- milliequ	ivalents p	er litar	· · · · · · ·	%
	1	1. 0	<0.1	<0.1	2.0	٩	0.4	1.0	İ	i		57.5
20.8	,	4.0	: ~U. I									
20.8 25.2		4.0 6.1	0.4	<0.1	1.5	Q	0.4	0.4				62.9

Soil Type: Baca loam Soil Nos.: S58Colo-50-10 Classification: Brown.

Location: 330 feet east, 100 feet south of N 1/4 corner, Sec. 10, T215, R46W, Prowers County, Colorado.

Climate: Continental climate, average annual precipitation 14 to 15 inches, elevation 3,840 feet. Prost-free

season 160 days.

Vegetation: Fallow. Physiographic Position: Upland.

Relief: Nearly level, 0 to 1 percent slope.

Drainage: Well. Moisture: Dry.

Water Table: None encountered. Stoniness: None Salt or Alkali: None observed.

Brosion: Slight to moderate, principally by wind. Described by: E. Milton Payne, November 7, 1958.

Horizon and Lincoln Lab. No.

Ap 0 to 3 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3.5/3 moist) loam; weak fine granular structure; slightly hard when dry, friable when moist; slightly effervescent; abrupt smooth boundary caused by tillage implements.

3 to 6 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3.5/3 moist) silty clay loam; moderate medium prismatic breaking to moderate medium subangular blocky structure; hard when dry, friable when moist; thin nearly continuous clay skins; noncalcareous; clear smooth boundary.

E2ca 6 to 13 inches. Brown (10YR 5/3 dry) to dark brown (10YR 4/3 moist) silty clay loam; moderate medium prismatic breaking to moderate fine subangular blocky structure; hard when dry, firm when moist; thin nearly continuous clay skins; strongly effervescent with a scattering of lime spots; clear smooth boundary.

B3cs 13 to 18 inches. Light brownish gray (10YR 6/2.5 dry) to grayish brown (10YR 4.5/2 moist) silty clay 9721 loam; weak coarse prismatic structure breaking to moderate medium subangular blocks; hard when dry, firm when moist; thin patchy clay skins; violently effervescent with prominent lime mottles; gradual smooth boundary.

Cca 18 to 25 inches. Pale brown (10YR 6/3 dry) to grayish brown (10YR 5/2.5 moist) light silty clay loam; 9722 weak coarse prismatic breaking to moderate medium subangular blocky structure; hard when dry, firm when moist; violently effervescent with prominent lime mottles; gradual smooth boundary.

Cl 25 to 36 inches. Very pale brown (10YR 6.5/3 dry) to brown (10YR 5/3 moist) silt loam; very weak very 9723 coarse prismatic structure breaking to weak coarse subangular blocks; slightly hard when dry, friable when moist; violently effervescent with a few lime streaks and mottles; gradual smooth boundary.

36 to 45 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) loam; very weak coarse 9724 subangular blocky structure; slightly hard when dry, friable when moist; violently effervescent; gradual smooth boundary.

45 to 60 inches plus. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) loam; massive; slightly hard when dry, very friable when moist; violently effervescent; this layer continued without change to 10 feet.

Bureau of Public Roads Samples:

9725

Ap 0 to 3 inches B2ca 6 to 13 inches C2 36 to 45 inches. SOIL. *Bancroft silt loam SOIL Nos. 863Colo-18-7 LOCATION Donglas County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska General Methods: 1A, 1Blb, 2A1, 2B

LAB. Nos. 18679-18687 March 1967

1]	T						Size clas	s and part	icle diamete	er (mm)	3A1						
	Ì		Total					Sand		Ši			<u> </u>	3Alb	3Ala	Coar	rse fragme	nts 2A2
ł	\			Τ		1	T		T	1	T	1) ·	7	Noncer-		T	
Depth	Horizon	Sand	Silt	Clay	Very coarse	Coarse	Medium	Fine	Very fine	1	Int. 🎞	int. 🎞		ļ	bonate	>- 2	2 - 19	19-76
(ln.)	1	(2-0.05)	(0.05- (2002)	(= 0.002)	(2-1)	(1-0.5)	(0.5-0.25)	(0.25-0.1)	(0.1-0.05)	0.05-0.02	(0.02- 0.002)	(0.2-0.02)	(2-0.1)	400005		ŧ) p.	t. of
1	1	_ =	1 0.002)	!	1 		t. of << 2		١	<u>'</u>	0.002)	' 			Clay (0.002	Pct.		76mm ==
0-6	Al	28.1	52.3	19.6	0.4	2.1	2,4	6.0	17.2	29.7	22.6	50.7	10.9		20	tr	_	
1 2	_	28.3	43.4	28.3		2.3		6.1	16.9	24.8	18.6		11.4	ì	28	-	Ì	ì l
6-9	B1				0.5		2.5	4.8				45.5		ł		tr	ŀ	i 1
9-13	B21t	25.5	40.0	34.5	0.3	1.6	1.8		17.0	22.2	17.8	42.4	8.5	0 0	35	tr	 	-
13-19	B22t	25.2	41.2	33.6	0.2	1.3	1.6	4.4	17.7	23.4	17.8	44.1	7.5	21.8	34	tr	i	
19-26	B23t	28.0	43.0	29.0	0.5	2.4	2.6	5.6	17.0	24.4	18.6	44.9	11.0	Ì	29	tr	F	
26-39	B3	31.7	42.0	26.3	0.5	3.3	3.4	7.0	17.5	25.2	16.8	46.9	14.2		26	tr		
39-51	ВЗса	27.9	44.8	27.3	0.4	2.8	3.0	6.0	15.7	24.9	19.9	44.2	12.2	۱.	27	tr	!	
51-69	IICcal	52.2	26.2	21.6	2.0	13.1	12.2	14.6	10.3	14.7	11.5	31.8	41.9	6.5	21	tr	l	
69-80	ITCcs2	60.4	21.5	18.1	2.3	15.5	15.5	18.4	8.7	12.0	9.5	29.0	51,7		17	tr	 _	11
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	<u> </u>	<u> </u>	<u> </u>	<u> </u>		<u> </u>			<u></u>	<u> </u>		<u> </u>	<u></u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	
	6Alm	6Bla			onate	602a		Bulk densit	y	4101		later conte					pH	
Depth	Organic	Nitrogen	C/N	as C	±C03	Ext.	4Ala	4Ala	4 Al b	l	4B4	4Blc	4B2	4C1	1			8Cla
(in.)	carbon	- Innovation	3,"	6ELb	3Ala	Iron	Field	1/3-	Air		Field	1/3-	15-	1/3- to	ł	İ		المرا
\ \ <i>,</i>	<u>b</u>	ļ		6R2a	<0.002	8.8	State	Bar	Dry	COLE	State	Bar	Bar	15-Bar			1	(1:1)
İ	1 =	t	ļ	<2 ==.		Fe	1		\	1		1	1	1	\	1	1	1
1	Pct.	Pct.	1	Pet.	Pct.	Pet.	g/cc	g/cc	g/cc	[Pct.	Pct.	Pct.	in/in.	[ľ	1	
0-6	3.12	0.241	13	 	T	0.7	1.23	1.21	1.24	0.007	18.3	26.5	9.5	0.21		\vdash		5.6
6-9		0.139	10	1	1	0.7	1.49	1.36	1.44	0.020	7.8	19.8	11.6	0.12	1	ľ	}	6.5
	1.33			1	l	0.8	1.57	1.42	1.57	0.036	8.6	21.3	14.0	0.10			1	6.7
9-13	0.87	0.093	9	+	 							21.2		0.12	ļ —			6.7
13-19	0.76	0.071	11	1	ì	0.8	1.62	1.47	1.63	0.036			13.0		i	ŀ		
19-26	0.52	0.051	10	-(s) -(s)	l	0.8	1.62	1.49	1.62	0.028	7.7	20.6	12.1	0.13	i i		1	6.9
26-39	0.43	<u> </u>	<u> </u>		<u> </u>	0.6	1.41	1.30	1.41	0.028	7.5	21.6	10.7	0.14			— —	7.2
39-51	0.45	İ	l	[3	tr	0.6	1.33	l	1.33	0.024		l	및·ᢢ			1	ľ	8.2
51-69	0.27			4	1		1.55	1.50	1.55	0.010		17.5	8.6	0.13		ľ	1	8.5
69-80	0.31	-	ļ <u> </u>	2	1	0.5	1.54	1.49	1.51	0.003	4.4	14.9	6.5	0.13		-		8.5
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	<u>. </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>		1	<u></u>		 _	_	<u> </u>			<u></u>	<u></u>	<u> </u>
		Extractal	ie bases	5Bla		6HLa	Cort. Ex		l		l i	1	[1	803		Base sat	
	6 M2a	Extractal	6P2a	5Bla 692a		1	5A3m	Sh.Cap.	 	ļ	ļ				803		5C3	5C1
Depth	6 M2a		6P2a	602a		Ext.	5A3m Sum	5Ala		<u> </u>	ļ I	į					5C3 Sum	5CI
Depth (in.)	6 162a. Ca				Sum	Ext.	5A3m	5Ala							Ca/Mg		5C3	5CI
		602a	6P2a	602a	Stem	Ext.	5A3m Sum	5Ala									5C3 Sum Cations	501. NEI ₄ 0Ac
		602a	6P2a	602a	Stzm.	Ext.	5A3a Sum Catalons	FALA NEO, CAC							Ca/Mg		5C3 Sum Cations Pct.	5 C1. NEL CA c
		602a.	6P2a	602a	1	Ext.	5A3m Sum	5Ala							Cas/Mg		5C3 Sum Oa tions Pct. 64	5C1. NEB ₄ OAc Pot. 81.
(In.)	Ca 10.2	602a Mg	6P2a	602a	meq/100 j	Ext. Acidity	5A3a Sum Catalons	FALA NEO, CAC							Ca/Mg		503 Sum Cations Pct. 64 81	5 C1. NEL CA c
0-6 6-9	Ca 10.2 12.4	602a Mg 2.3 3.9	6P2a Na tr 0.1	602a K	meq/100 13.5 17.4	Ext. Acidity	5A3a Sum Sations 21.2 21.6	MED, OAc							Cas/Mg		503 Sum On tions Pct. 64 81 85	5C1. NEB ₄ OAc Pot. 81.
0-6 6-9 9-13	10.2 12.4 16.3	602a Mg 2.3 3.9 5.1	6P2a Na Vtr 0.1 0.1	1.0 1.0 0.8	meq/100 p 13.5 17.4 22.3	Ext. Acidity 7.7 4.2 3.8	5A3a. Sum Cations 21.2 21.6 26.1	16.6 18.0 22.4							Ca/Mg		503 Sum Cations Pct. 64 81	5C1. NEL, OAc Pet. 81. 97
0-6 6-9 9-13 13-19	10.2 12.4 16.3	602a Mg 2.3 3.9 5.1 5.4	6P2a Na Vtr 0.1 0.1	1.0 1.0 0.8 0.6	meq/100 13.5 17.4	7.7 4.2 3.8	5A3a Sum Salions 21.2 21.6 26.1 26.1	16.6 18.0 22.4 23.0							Ca/Mg 4.4 3.2 3.2		503 Sum Cations Pct. 64 81 85 88 90	5C1. NH, OAc Pet. 81. 97. 100
0-6 6-9 9-13 13-19 19-26	10.2 12.4 16.3 16.9 15.9	602a Mg 2.3 3.9 5.1 5.4 5.2	6P2a Na Vtr 0.1 0.1 0.1 0.1	1.0 1.0 0.8 0.6 0.5	meq/100 13.5 17.4 22.3 23.0 21.8	7.7 4.2 3.8 3.1 2.5	5A3a Sum Stilons 21.2 21.6 26.1 26.1 24.3	16.6 18.0 22.4 23.0 20.6							Ca/Mg 4.4 3.2 3.2		503 Sum Cations Pct. 64 81 85 88 90	5C1. NEL, OAc. Pet. 81. 97. 100.
0-6 6-9 9-13 13-19 19-26 26-39	10.2 12.4 16.3 16.9 15.9 14.8	602a Mg 2.3 3.9 5.1 5.4 5.2 4.7	6P2a Na tr 0.1 0.1 0.1 0.2 0.2	1.0 1.0 0.8 0.6 0.5 0.4	meq/100 13.5 17.4 22.3 23.0 21.8 20.1	7.7 4.2 3.8	5A3a Sum Salions 21.2 21.6 26.1 26.1 24.3	16.6 18.0 22.4 23.0 20.6 18.7							Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.1		503 Sum Cations Pet. 64 81 85	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51	10.2 12.4 16.3 16.9 15.9 14.8	602m Mg 2.3 3.9 5.1 5.4 5.2 4.7	6P2m Na 0.1 0.1 0.1 0.2 0.2	1.0 1.0 0.8 0.6 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1	7.7 4.2 3.8 3.1 2.5	5A3a Sum Stilons 21.2 21.6 26.1 26.1 24.3	16.6 18.0 22.4 23.0 20.6 18.7							Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.1		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69	10.2 12.4 16.3 16.9 15.9 14.8 14.5e 9.7e	602m Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.34 3.24	6P2a Na 0.1 0.1 0.1 0.2 0.2 0.2	1.0 1.0 0.8 0.6 0.5 0.4 0.5	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5	5A3a Sum Stilons 21.2 21.6 26.1 26.1 24.3	16.6 18.0 22.4 23.0 20.6 18.7 17.9 11.6							Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51	10.2 12.4 16.3 16.9 15.9 14.8	602m Mg 2.3 3.9 5.1 5.4 5.2 4.7	6P2m Na 0.1 0.1 0.1 0.2 0.2	1.0 1.0 0.8 0.6 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1	7.7 4.2 3.8 3.1 2.5	5A3a Sum Stilons 21.2 21.6 26.1 26.1 24.3	16.6 18.0 22.4 23.0 20.6 18.7							Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.1		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69	10.2 12.4 16.3 16.9 15.9 14.8 14.5e 9.7e	602m Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.34 3.24	6P2a Na 0.1 0.1 0.1 0.2 0.2 0.2	1.0 1.0 0.8 0.6 0.5 0.4 0.5	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5	5A3a Sum Stilons 21.2 21.6 26.1 26.1 24.3	16.6 18.0 22.4 23.0 20.6 18.7 17.9 11.6							Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69	10.2 12.4 16.3 16.9 15.9 14.8 14.5e 9.7e	602m Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.34 3.24	6P2a Na 0.1 0.1 0.1 0.2 0.2 0.2	1.0 1.0 0.8 0.6 0.5 0.4 0.5	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5	5A3a Sum Stilons 21.2 21.6 26.1 26.1 24.3	16.6 18.0 22.4 23.0 20.6 18.7 17.9 11.6							Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69	10.2 12.4 16.3 16.9 15.9 14.8 14.5c 9.7c 8.3c	602m Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d	6P2a Na 10.1 0.1 0.2 0.2 0.5 0.8 1.0	1.0 1.0 0.8 0.6 0.5 0.4 0.5	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 2attons 21.2 21.6 26.1 24.3 21.6	16.6 18.0 22.4 23.0 20.6 18.7 17.9 11.6 9.4		onste	below	39 inc	hes -		Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69	10.2 12.4 16.3 16.9 15.9 14.8 14.5c 9.7c 8.3c	602m Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d	6P2a Na V 0.1 0.1 0.1 0.2 0.2 0.5 0.8 1.0	1.0 1.0 0.8 0.6 0.5 0.4 0.5	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum Dations 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 20.6 18.7 11.6 9.4	f cart	onate	below	39 inc	hes.		Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69	10.2 12.4 16.3 16.9 14.8 14.5c 9.7c 8.3c	602m Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d	6P2a Na 0.1 0.1 0.1 0.2 0.2 0.5 0.8 1.0	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum Sations 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 20.6 18.7 17.9 11.6 9.4	f cart	bes ()	ethod	6A).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80	10.2 12.4 16.3 16.9 14.8 14.5c 9.7c 8.3c	602a Mg 2.3 3.9 5.1 5.2 4.7 4.3d 3.2d 2.4d to Cl	6P2a Na Na 0.1 0.1 0.2 0.2 0.5 0.8 1.0	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80	10.2 12.4 16.3 16.9 14.8 14.5c 9.7c 8.3c	602m Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d	6P2a Na 0.1 0.1 0.1 0.2 0.2 0.5 0.8 1.0	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80	10.2 12.4 16.3 16.9 14.8 14.5c 9.7c 8.3c	602a Mg 2.3 3.9 5.1 5.2 4.7 4.3d 3.2d 2.4d to Cl	6P2a Na Na 0.1 0.1 0.2 0.2 0.5 0.8 1.0	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80	10.2 12.4 16.3 16.9 14.8 14.5c 9.7c 8.3c	602a Mg 2.3 3.9 5.1 5.4 5.2 4.3d 3.2d 2.4d to Cl 802 Ext. Iron	6P2a Na Na 0.1 0.1 0.2 0.5 0.8 1.0	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80	Ca 10.2 12.4 16.3 16.9 15.9 14.5 9.7c 8.3c Ratios 802 NRI, OAc CEC	602a Mg 2.3 3.9 5.1 5.4 5.2 4.3 4.3 3.2 4.3 3.2 5.0 Ext. Iroz	6P2a Na Na 0.1 0.1 0.1 0.2 0.2 0.5 0.8 1.0 801 15-Bar Water	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80 Depth (In.)	10.2 12.4 16.3 16.9 15.9 14.5 9.7c 8.3c Ratios 802 NH, OAc CEC	602a Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d to Cl SD2 Ext. Iron 0.04 0.02	6P2a Na Na 0.1 0.1 0.1 0.2 0.2 0.5 0.8 1.0 801 15-Ber Water 0.48 0.39	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80	10.2 12.4 16.9 15.9 14.8 14.5c 9.7c 8.3c Ratios 802 RR, OAc CEC	602a Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d Ext. Iroza	6P2a Na tr 0.1 0.1 0.2 0.2 0.5 0.8 1.0 801 15-Ber Water 0.48 0.39 0.41	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80 Depth (In.)	10.2 12.4 16.3 16.9 15.9 14.5 9.7c 8.3c Ratios 802 NH, OAc CEC	602a Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d to Cl SD2 Ext. Iron 0.04 0.02	6P2a Na Na 0.1 0.1 0.2 0.5 0.8 1.0 801 15-Ber Water 0.48 0.39 0.41 0.39	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80 Depth (In.)	10.2 12.4 16.9 15.9 14.8 14.5c 9.7c 8.3c Ratios 802 RR, OAc CEC	602a Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d Ext. Iroza	6P2a Na Na 0.1 0.1 0.1 0.2 0.2 0.5 0.8 1.0 801 15-Ber Water 0.48 0.49 0.41	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80 Depth (In.) 0-6 6-9 9-13 13-19 19-26	Ca 10.2 12.4 16.3 16.9 15.9 14.5c 9.7c 8.3c Ratios 8D2 RRE, OAc CEC 0.85 0.64 0.65 0.68 0.71	602a Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.33 2.43 to Cl 8D2 Ext. Iroz	6P2a Na Na 1tr 0.1 0.1 0.2 0.2 0.5 0.8 1.0 801 15-Barr Water 0.48 0.39 0.41 0.42	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80 Depth (In.) 0-6 6-9 9-13 13-19 19-26 26-39	10.2 12.4 16.3 16.9 15.9 14.5c 9.7c 8.3c Ratios 802 0.85 0.64 0.65 0.71 0.71	602a Mg 2.3 3.9 5.1 5.4 5.2 4.3 4.3 3.2 4.3 2.4 5.2 4.0 0.02 0.02 0.02 0.03	6P2a Na Na 0.1 0.1 0.1 0.2 0.2 0.5 0.8 1.0 801 15-Ber Water 0.48 0.39 0.41 0.39 0.41	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80 Depth (In.) 0-6 6-9 9-13 13-19 19-26 26-39 39-51	10.2 12.4 16.3 16.9 15.9 14.8 14.8 9.7c 8.3c Ratios 802 0.85 0.64 0.65 0.68 0.71	602a Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d to Cl 802 Ext. Iron 0.04 0.02 0.02 0.02 0.02 0.02 0.02	6P2m Na tr 0.1 0.1 0.1 0.2 0.2 0.5 0.8 1.0 801 15-Ber Water 0.48 0.39 0.41 0.39 0.41 0.42	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80 Depth (In.) 0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69	Ca 10.2 12.4 16.3 15.9 15.9 14.8 14.5c 9.7c 8.3c Rattlos 802 NR, OAc CEC 0.85 0.64 0.65 0.68 0.71 0.71 0.66 0.55	602a Mg 2.3 3.9 5.1 5.2 4.7 4.3d 3.2d 2.4d to Cl 802 Ext. Iroz 0.04 0.02 0.02 0.02 0.02 0.02 0.02	6P2a Na tr 0.1 0.1 0.2 0.2 0.5 0.8 1.0 801 15-Berr Water 0.48 0.39 0.41 0.39 0.42 0.40	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100
0-6 6-9 9-13 13-19 19-26 26-39 39-51 51-69 69-80 Depth (In.) 0-6 6-9 9-13 13-19 19-26 26-39 39-51	10.2 12.4 16.3 16.9 15.9 14.8 14.8 9.7c 8.3c Ratios 802 0.85 0.64 0.65 0.68 0.71	602a Mg 2.3 3.9 5.1 5.4 5.2 4.7 4.3d 3.2d 2.4d to Cl 802 Ext. Iron 0.04 0.02 0.02 0.02 0.02 0.02 0.02	6P2m Na tr 0.1 0.1 0.1 0.2 0.2 0.5 0.8 1.0 801 15-Ber Water 0.48 0.39 0.41 0.39 0.41 0.42	1.0 1.0 0.8 0.6 0.5 0.4 0.5 0.4	13.5 17.4 22.3 23.0 21.8 20.1 19.8 14.0	7.7 4.2 3.8 3.1 2.5 1.5	5A3a Sum 21.2 21.6 26.1 26.1 24.3 21.6	16.6 18.0 22.4 23.0 16.7 17.9 11.6 9.4	f cart	bes (M	ethod ethod	6A). 6N3m).			Ca/Mg 4.4 3.2 3.2 3.1 3.1 3.4 3.0		503 Sum Cations Pct. 64 81 85 88 90	5C1 NEL OAd Pet. 81 97 100 100

Soil Type : *Bancroft silt loam

Soil Nos. : S63Colo-18-7

Location 1200 feet west, 600 feet north of the southeast corner of Section 21, T108, R65W, Douglas

County, Colorado

: Continental; average annual precipitation 20 inches. Mean annual temperature 44 degrees F. Climate

Growing season 120 days. Elevation 7200 feet.

: Native grass; blue grams, western wheatgrass, fringed sage and snakeweed

Parent Material : Aeolian silts and sands, probably local in origin

Vegetation Physiographic

: Upland Position

: Nearly level, 2 percent north facing slope. Slope about 400 feet long, grading toward a Relief

small drainageway. Pit about 100 feet below the crest of the ridge : Surface drainage slow; internal drainage medium; moderate intake rate

Drainage Moisture : Moist to 7 inches and below 4 feet. Usually moist throughout

Watertable : None

Stoniness

Salt or Alkali : None observed, other than calcium carbonate

Erosion : Slight water and wind

Sampled by : R. K. Dansdill, J. B. Brown, R. H. Jordan, and L. G. Shields; August 15, 1963

Described by : J. B. Brown

Horizon and Lincoln Lab. No.

0 to 6 inches. Very dark brown (10YR 2/2 moist) silt loam; dark grayish brown (10YR 4/2 dry); 18679 weak medium subangular blocky structure breaking to moderate fine granules; soft when dry, very friable when moist; noncalcareous; clear smooth boundary,

6 to 9 inches. Very dark brown (10YR 2.5/2 moist) silt losm; dark grayish brown (10YR 4/2 dry) 18680 weak coarse subangular blocky structure; slightly hard when dry, very friable when moist; few thin patchy clay films on vertical ped faces; noncalcareous; clear smooth boundary.

B21t 9 to 13 inches. Very dark grayish brown (10YR 3/2 moist) clay loam; grayish brown (10YR 4.5/2 18681 dry); moderate medium and fine prisms breaking to strong fine subangular blocks; very hard when dry, firm when moist; thin nearly continuous clay films on ped surfaces; few bleached sand grains on ped surfaces; noncalcareous; clear smooth boundary.

B22+ 13 to 19 inches. Brown (10YR 4/3 moist) clay loam; brown (10YR 5/3 dry); moderate medium and 18682 fine prisms breaking to strong medium and fine angular and subangular blocks; very hard when dry, firm when moist; thin nearly continuous clay films; few bleached sand grains on ped surfaces; noncalcareous; gradual smooth boundary.

B23t. 19 to 26 inches. Brown (4/3 moist) clay loams; brown (10YR 5/3 dry); moderate medium and fine 18683 prisms breaking to moderate medium angular and subangular blocks; very hard when dry, firm when moist; thin nearly continuous clay films; noncalcareous; gradual smooth boundary.

26 to 39 inches. Brown (10YR 5/3 moist) loam; pale brown (10YR 6/3 dry); moderate medium prisms breaking to moderate medium subangular blocks; hard when dry, friable when moist; thin patchy ВЗ 18684 clay films on ped surfaces; noncalcareous; clear slightly wavy boundary.

39 to 51 inches. Brown (10YR 5/3 moist) loam; very pale brown (10YR 7/3 dry); weak coarse prisms breaking to weak medium subangular blocks; slightly hard when dry, very friable when moist; very highly calcareous; few lime mycelia; few patchy clay films on vertical faces; 18685 clear smooth boundary.

IICcal 51 to 69 inches. Yellowish brown (10YR 5/4 moist) loam; light yellowish brown (10YR 6.5/4 dry); weak coarse prisms; slightly hard when dry, very friable when moist; very highly calcareous; many lime mycelia and lime coatings on ped surfaces; diffuse boundary. 18686

IICca2 69 to 80 inches. Yellowish brown (10YR 5.5/4 moist) sandy loam; very pale brown (10YR 8/4 18687 cry); massive structure; slightly hard when dry, very friable when moist; very highly calcareous; few lime mycelia; lime pockets 6 inches across; reddish brown structured clay occurring at 10 feet.

Remarks: The Bancroft series is evidently developing from aeolian silts and sands that contain at least small amounts of lime. Buried soils of clay loam texture with high chroma, developing in out-wash material, are not uncommon in this soil unit below a depth of 4 to 5 feet. This soil unit gradually grades into the Fondis Series as one goes from south to north in the County, and the outwash material of the Fondis Series may be a source of the parent material for this series. Soil temperature at 11.0 feet was 11.5 degrees C.

Bureau of Public Roads Samples: B22t and IICcal horizons.

Mineralogy:

Observations on very fine sand (Method 7B1): Al, B22t, and IICca2 horizons. Approximately 70 to 75 percent feldspar, 20 to 25 percent quartz, and 5 to 10 percent accessory minerals. Orthoclase is the predominant feldspar; microcline and low-calcium plagicclase are also present in lesser amounts. Most grains show some etching and pitting; minute inclusions occur in a number of the grains. Compound grains that appear as altered feldspar are common in the horizons examined. Biotite, hornblende, opaques, and zircon are the predominant accessory minerals. Biotite increases slightly with depth. Other minerals identified in trace amounts include epidote, zoisite, and pyroxene (diopside?); volcanic glass is absent. Mineralogy of the IICca2 horizon is similar to that of the Al and B22t horizons.

Clay mineralogy (Method 7Al, 7A2): B22t and IICcal horizons. The B22t contains moderate amounts of montmorillo-nite, kaolinite, and mica (or illite) in about equal proportions. The crystalline quality of the kaolinite and mica is very good, the montmorillonite is of fair quality. The IICcal has the same suite of minerals in nearly the same proportions. The montmorillonite is of poorer crystalline quality. Clay mineralogy is mixed.

SOIL Nos. 863Colo-18-8 LOCATION Douglas County, Colorado SOIL -*Bancroft silt loam SOIL SURVEY LABORATORY Lincoln, Nebraska 18688-18696 March 1967 IAR Nos General Methods: 1A, 1Blb, 2A1, 2B Size class and particle diameter (mm) Total Sand Silt Coarse fragments 242 Verv Fine Int II Depth Horizon Sand Cilt Ctay Very fine Int. III > 2 2 - 19 19-76 (2-1) (1-0.5) (0.5-0.25) (0.25-0.1) (0.1-0.05) 0.05-0.02 (0.02-0.02) (0.2-0.02) (2-0.05) **8** (0.05<u>-</u> 0.002) (= 0.002) (2-0.1)ko.0002 Pct. of ≪ 76mm Pct 12.1 11.8 18.9 2.2 2.7 16.8 0-5 50.5 30.6 1.8 27.0 18.5 23.5 t.r 51.8 48.9 49.2 0.5 17.3 13.8 13.6 5-8 B1 41.4 31.2 27.4 1.4 2.0 13.4 24.1 17.6 13.6 tr 32.5 32.6 31.5 30.3 28.0 <u>8-12</u> B21t 36.0 10.1 1.6 11.2 22.2 18.1 14.4 tr 23.5 23.3 23.6 24.0 15.7 15.6 12-18 B22t 37.1 0.2 0.7 1.4 11.3 16.9 tr 18-26 34.3 1.6 11.4 18.7 50.6 16.4 37.7 0.3 14.4 B23t 1.1 tr 19.9 26-34 34-40 36.7 41.3 35.5 32.4 27.8 26.3 10.0 10.5 15.6 51.0 13.1 17.3 1.1 2.2 B24t 1.7 12.0 51.1 tr ВЗса 25.8 1.9 11.8 23.4 18.2 14.4 40-56 41.6 32.6 2.2 2.3 50.1 18.2 tr Cca 39.1 35.5 25.4 10.3 24.8 20.5 15.0 14.3 14.2 56-70 IIC 53.1 6E2a 4DL Water content 6Ala 6Bla 4Ald 4Ald 4Alb **PBP** 4Rlc 4C1 8C1= 8сть Organic Denth Nitrogen C/N Carbon Field 1/3-Air Field 1/3-15-1/3-to Sat. carbon (In.) as CaCO (1:1) State Bar Dry COLE State 15-Bar aste ъ Pet Pct Pct. De+ 19/19 0:13 0.003 16.7 1.37 1.37 1.39 5.7 6.2 0-5 1.90 0.147 17.4 7.6 5-8 8-12 12-18 1.23 0.120 10 1.41 0.014 16.9 19.5 9.9 0.13 1.55 1.43 1.62 1.50 1.62 1.49 20.9 19.1 0.91 0.092 10 1.56 0.028 8.4 0.13 6.5 11 -(8) -(8) -(8) 1.62 0.024 7.6 11.6 0.11 6.8 7.3 7.3 7.7 8.4 18-26 0.041 10 1.62 0.028 20.2 0.13 0.43 1.54 1.42 1.53 1.43 1.53 0.024 6.8 20.3 11.0 0.13 26-34 0.31 tr(s) tr(s) tr(s) 0.024 20.3 10.4 0.14 0.30 1.53 7.0 7.5 8.3 1.53 1.42 0.024 10.4 40-56 19.9 0.13 7.5 0.24 8.1 0.28 1.35 0.020 19.9 9.6 0.14 56-70 Cat. Beh.Cap. £03 8a BALA Extractable bases 5B1a 6HLa 5C1 5A3a | 5Ala Klec 5C3 61824 602a 6P2a 602 Vater Depth Same Ext. Sum at Cond. (In.) Ca/Mg Dation E_LOV Ca Mg Acticative Decisions MH)_sOA Be tas mtior meq/100 g Pct. CE Pct. 68 2.1 0.1 0.6 10.7 5.1 4.2 15.8 11.9 90 7.9 0-5 3.4 103 16.4 20.6 15.9 80 3.6 0.4 5-8 12.3 0.1 104 23.1 23.2 3.8 3.4 19.0 8-12 15.2 4.0 0.1 0.4 19.7 105 3.5 12-18 0.2 0.4 20.2 3.0 19.2 92 100 3.44 18.0 18-26 13.8c 0.4 0.4 18.0 1.6 19.6 18.6 17.9 14.16 3.4d 0.7 0.4 26-3h 4.3 4.4 17.0 1.2 0.4 19.1 3.34 34-40 14.20 16.9 14.1c 3.24 40.7 1.55 40-56 0.3 1.7 19.3 17.4 5.0 2.84 56-70 14.00 2.1 0.4 19.3 Ratios to Clay Few grains of carbonate below 40 inches. 12 kg/m² to 60 inches (Mathod 6A). MRh₂Cl-EtOH extraction (Mathod 6N3s). MRh₂Cl-EtOH extraction (Mathod 603s). 801 रेका Depth 15-Bar ъ. MHLLOAG (in.) CEC. Water ¢. 0.40 0.63 5-8 8-12 0.58 0.36 0.60 0.37 12-18 0.63 0.41 18-26 0.64 26-34 34-40 40-56 0,64 0.40 0.65 0.40 0.40 56-70 0.69 0.38

Soil Type *Bancroft silt loam 17 Soil Nos. S63Colo-18-8 Location 650 feet west, 300 feet south of the northeast corner of Section 19, T108, R66W, Douglas County, Colorado Climate Continental; average annual precipitation 18 to 20 inches. Mean annual temperature 44 degrees F. Growing season 120 days. Elevation 7200 feet. Vegetation Native grass; blue grama, Junegrass, western wheatgrass, mountain muhly and fringed sage Parent Material : Aeolian silts and sands, probably local in origin Physiographic Position : Upland Relief Sloping, 5 percent east facing slope. Slope is about 800 feet in length; pit located about midway on the slope Surface drainage rapid; internal drainage medium; moderate intake rates Drainage Moist to 8 inches and below 4 feet. Generally moist throughout Moisture Watertable None Very few fine water worn gravels throughout Stoniness None other than calcium carbonate observed Salt or Alkali Erosion Slight water erosion Sampled by : R. K. Dansdill, J. B. Brown, R. H. Jorden, and L. G. Shields; August 15, 1963 Described by : J. B. Brown Horizon and Lincoln Lab. No. 0 to 5 inches. Very dark brown (10YR 2/2 moist) losm; dark grayish brown (10YR 4/2 dry); 18688 weak medium subangular blocky structure breaking to moderate fine granules; soft when dry, very friable when moist; noncalcareous; clear smooth boundary. 5 to 8 inches. Very dark brown (10YR 2.5/2 moist) loam; dark grayish brown (10YR 4/2 dry); 18689 week medium subangular blocky structure; soft when dry, very friable when moist; few thin patchy clay films in the lower part of this horizon on vertical faces; slightly more clay than horizon above; noncalcareous; clear smooth boundary. B21t 8 to 12 inches. Dark brown (10YR 3/3 moist) clay loam; moderate medium and fine prisms 18690 breaking to strong fine subangular blocks; very hard when dry, firm when moist; thin nearly continuous clay films with some bleached sand grains on ped surfaces; noncalcareous; clear smooth boundary. 12 to 18 inches. Brown (10YR 4/3 moist) clay loam; brown (10YR 5/3 dry); moderate medium to B22t fine prisms breaking to strong medium to fine angular and subangular blocks; very hard when dry, firm when moist; dark streaks are common in this horizon, some of which are krotovinas; 18691 thin nearly continuous clay film: noncalcareous: clear amouth boundary. H.

SOIL	SURVEY	LABORAT	ORY Lincoln,	Nebr. February	1959
SOIL	•	issel indy loam	LOCATION	Chaffee County, C	olorado

SOIL NOS. <u>S58Colo-8-3</u>

LAB. NOS. 9056-9061

į		181			CLE-SIZ	E DISTRIB	UTION (in	mai.) (pe	r cent)	3A_		
DEPTH INCHES	HORIZON	VERY COARSE SAND 2-1	COARSE SAND	MEDIUM SAND 0.5-0.25	SAND	VERY FINE SAND 0.10-0.05	SILT 0.05-0. 0 02	GLAY < 0.002	0. 2-0.02	2 02-202	2A2 > 2 (<1904	TEXTURA CLASS
0-2 2-4 4-8 8-21 21-42 42-50+	B22t B3 C	23.1a 23.7a 17.3a 21.0a 16.0	18.2a 19.1a 20.6a 20.1a	8.0a 8.1a 11.2a 12.0a 11.8	8.1a 7.5a 10.9a 12.9a 17.0	7.0a 5.4a 6.2a 7.6a 9.1	25.5 23.7 20.6 15.2	10.1 12.5 13.2 11.2	25.5 21.6 22.9 23.7 27.3	11.1 11.1 9.3 5.7 5.8 6.4	10 10 23 24 24 24	cosl cosl cosl cosl cosl
8cia 1:1	pH 1:5		ORGA	NIC MA	TTER	Free Iron %Fe ₂ 03	क्षमाण्यारणस्य	CoCO3 equiv	adaganiaagg71.4994	MO!S1 1/10 ATMOS.	URE TE	NSIONS 4B2 15 ATMOS.
5.5 6.6 7.2 7.8 8.2			2.75 1.48 0.93 0.30 0.10 0.03	0.195 0.130 0.094 0.035	14 11 10 8	1.2 1.1 1.4 0.8 0.8 0.9		4 44 4				6.3 5.6 5.6 4.0 3.3 3.7
5Ala Cation			TABLE (BASE SAT.	503 Base	Sum Bases	Sum Cation	Ca/Mg		1 2, 1100 pcd 1111 1111 1111

Soil Type: Bassel sandy loam. Described by: A. J. Cline

Location: Swa of Sec. 23, Tl45, R77W, Chaffee County, Colorado.

Date of Sampling: September 1957

Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline.

Physiographic Position: Side slope of a high mountain valley at an elevation of

approximately 9,300 feet.

Topography: A moderate convex slope of approximately h percent facing west. Drainage: Well drained. Vegetation: Ring muhly, blue grama, sage, and fescue. Use: National Forest Service land.

Soil Nos.: S58Colo-8-3

Lincoln Horizon

9056 A₁ 0-2 inches

Brown (10YR 5/3 dry) to dark brown (10YR 3/3 moist) sandy loam; soft when dry, very friable when moist; moderate fine granular structure; noncalcareous; approximately 15 percent of this horizon is gravel; lower boundary clear and smooth.

9057 B_{2lt} 2-4 inches

Brown or dark brown (7.5YR 4/h dry) to dark brown (7.5YR 3/4 moist) gravelly sandy clay loam; hard when dry, very friable when moist; weak medium prismatic structure breaking to weak to moderate medium subangular blocks; noncalcareous; there are thin patchy clay skins on both the horizontal and vertical faces of most of the soil aggregates; approximately 15 percent of this horizon is gravel; lower boundary clear and smooth.

9058 B 22t 1rches Brown (7.5YR 5/4 dry) to dark brown (7.5YR 3.5/4 moist)

moist; weak medium prismatic structure breaking to weak to moderate medium subangular blocks; noncalcareous; there are thin patchy clay skins on both the horizontal and vertical faces of the soil aggregates; approximately 15 percent of this horizon is gravel; lower boundary gradual and smooth.

9059 B 8-21 inches

Light brown (7.5YR 6/3 dry) to dark brown (7.5YR 1/3 moist) gravelly heavy sandy loam; hard when dry, very friable when moist; weak medium subangular blocky structure; noncalcareous; there are a few thin patchy clay skins principally on the vertical faces of the soil aggregates; approximately 15 percent of this horizon is gravel; lower boundary gradual and smooth.

9060 C 21-42 inches

Light brown (8.75YR 6/3 dry) to brown or dark brown (8.75YR 4/3 moist) gravelly sendy loam; hard when dry, very friable when moist; weak medium subangular blocky structure noncalcareous; approximately 25 percent of this horizon is gravel; lower boundary is diffuse and irregular.

9061 Cca 42-50 / Pale brown (10YR 6/3 dry) to brown or dark brown (10YR 4/3 moist) gravelly sandy loam; hard when dry, very friable when

SOIL	SURVE	LABORATOR	Y Lincoln,	Nebr.	February 1959
SOIL	TYPE	Bassel sandy loam	LOCATION	Chaffee	County, Colorado
S 03	IL NOS.	\$58Co1o-8-12	LAB.	NOS.	9095-9100

4		1B1					uTion (in			3A1	188 i en 154 i en 64 i en 64 i	
DEPTH INCHES	Horizon	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURA CLASS
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0, 2-0.02	<u>0</u> 92-0902	(<1.9mm	.)
0-3	Al	22.1	15.5	7.9	13.7		20.9	8.3	30.8	8.6	14	cosl
3-6	ΑB	13.6	13.7	10.9	18.7		16.1	16.0	28.6	7.4	12	ccsl
6-14	B2t	16.0	14.9	12.0	16.6		12.8		27.0	5.5	11	cosl
14-21	ВЗса	18.5	16.2	10.6	16.5		12.5	14.2	27.7	5.5	22	cosl
21-32 32-46+	Cca C	28.8 29.9	17.5 25.8	7.4 9.7	9 . 1 8 . 9		11.8 9.7	21.0 12.8	12.7 9.8	8.0 7.1	36 25	scl cosl
1088014414141414bilda		441244444444444444444444444444444444444				387435538884885565588	Mpintercidotarffilm	*:*1323410888888	2 148948 1 1318474444			
	H,		ORG	NIC MA	TTER	Free		6Ela		MOIST	URE TE	NSIONS
8 Cla	1:5	1:10	6Ala Organic Carbon	6Bla NITRO- GEN	C/N	Fe ₂ O ₃		CoCO3 equiv- gient		1/10 ATMOS.	1/3 ATMOS.	4B2 15 atmos.
1:1			%	%		6CLa	_ •	%		%	%	%
5.9 6.9 7.4 8.2 8.5 8.3			0.92 0.89 0.54 0.26 0.32 0.05	0.090 0.070 0.047 0.020 0.026	13 11 13	1.5 1.9 1.9 1.8 0.8 1.5		3 4 4 5 4 5 7				3.9 6.2 7.4 6.0 9.1 6.3
5Ala CATION	63000	EXTRAC 602b	TABLE (CATIONS 6P2a	5Bla 692a	BASE SAT.	5C3 Base	Sum	Sum Cation	Ca/Mg	9 9 9146846946	224 284 0444 448 848 848 8
APACITY NH _L , AC	Co	Mg	H alents per	Na	K		Sat. % on Sum	5Bla	5A3a. .00g—>	81D3		
8 0	4.8		- -			81	Cations 62			4.0		
8.0 13.6 15.9 13.6 16.5 11.9	10.7 12.8	1.2 3.0 3.8 4.1 5.2 5.9	4.0 2.0 1.6 0.8 V0.1 V0.1	0.1 0.1 0.1 0.6 0.9	0.5 0.6 0.6 0.4	105 108	91 91	14.3	10.5 16.3 18.8	3.6 3.4		

Soil Type: Bassel Sandy Loam. Soil Type: Bassel Sandy Loam.

Described by: A. J. Cline.
Location: Swit of Sec. 23, Tllw, R78w, Chaffee County, Colorado.

Date of Sampling; September 1957

Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline.
Physiographic Position: Side slope of a mountain valley at elevation of approximate 9,200 feat.

Topography: A moderate convex slope of approximately 5 nercent facing south.

Drainage: Well drained.

Vegetation: Elue grama, rabbit brush, sage, winterfat and scattered pinon.

Use: National Forest Service lands.

\$011 Nos.: \$58Colo-8-12

Lincoln Horizon

Lab. No.

9095 0 - 3inches Brown (10YR 5/3 dry) to dark brown (10YR 3/3 moist) gravelly sandy loam; soft when dry, very friable when moist; moderate fine granular structure; noncalcareous; lower boundary clear and smooth. Approximately 10 percent of this horizon is gravel.

9096 AB 3-6 inches Dark grayish brown (10YR 1/2 dry) to very dark grayish brown (10YR 3/2 moist) sandy loam; slightly hard when dry, very friable when moist; moderate medium prismatic structure breaking to moderate medium subangular blocks: noncalcareous; there are thin patchy clay skins on both the horizontal and vertical faces of the soil ageregates in this horizon; approximately 15 percent of the horizon is gravel; lower boundary gradual and smooth.

B_{2t} 9097 6-14 inches

Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3 moist) sandy clay loam; hard when dry, friable when moist; moderate medium prismatic structure breaking to moderate medium subangular blocks; noncalcareous; there are thin continuous clay skins on the surfaces of the soil aggregates; approximately 15 percent of this horizon is gravel; lower boundary gradual and smooth.

Взса 9098 14-21 inches

Brown or pale brown (10YR 5.5/3 dry) to brown (10YR 4.5/3 moist) gravelly light sandy clay loam; hard when dry, friable when moist; weak medium prismatic structure breaking to weak medium subangular blocks; strongly effervescent; this is a weak horizon of lime accumulation with visible lime occurring as concretions; there are thin patchy clay skins on both the horizontal and vertical faces of the soil aggregates; approximately 25 percent of this horizon is gravel, lower boundary gradual and smooth.

9099 Cca 21-32 inches

Very pale brown (10YR 7/3 dry) to pale brown (10YR 6/3 moist) gravelly sandy loam slightly hard when dry, very friable when moist; massive violently efervescent; this is a strong horizon of lime accumulation with visible lime occurring in finally divided forms and as concretions; approximately 30 percent of this horizon is gravel; lower boundary diffuse and smooth.

9100 C 32-46 ≠ inches

Pale brown (10YR 6/3 dry) to yellowish brown (10YR 5/4 moist) gravelly sand; slightly hard when dry, very friable when moist: massive; violently efferwescent; this is a weak horizon of lime accumulation with some visible lime occurring in concretions usually about 1/4 inch in diameter, and with some visible lime in finely divided forms and some in thin seams and streaks; approximately 40 or 50 percent of this horizon is gravel.

			LABORATO	,					
	SOI	L Nos	859Colo-44-	3	LAB. NO	os. <u>108</u>	4 1- 10848	*******************************	
		VERY RIZON COARSE SAND	COARSE MEDIUM F	VERY FINE FINE AND SAND	SILT CL	.AY	2A2 >2	TEXTURAL CLASS	4.
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Soil Type: *Rijou leasy sand Soil Nos.: 8590010-44-3 Field classification: Brown.

Location: 190 feet west, 175 feet north of southeast corner, Sec. 25, T4N, R59W, Morgan County, Colorado. Photo: YE-1F-149.

Climate: Continental, average annual precipitation 13-15 inches. Elevation 4,450 feet. Frost-free season 146 days. Mean annual temperature 48° F.

Vegetation: Sand dropseed, sand sage, blue grams, few annual weeds.

Parent material: Arkosic alluvium. Physiographic position: Terrace. Relief: Nearly level 0-1 percent slope.

Drainage: External slow, internal rapid.
Moisture: Moist to 35 inches at time of sampling.

Water table: None Stoniness: Few small gravels throughout profile.

Salt or alkali: None observed other than calcium carbonate at the 88- to 91-inch level.

Erosion: Slight.

Described by: Clayton F. Spears, May 5, 1959.
Remarks: Krotovinas of worms and insects AB to Cl horizon. Few streaks lime 88-91 inches.

Horizon and <u>Idneoln</u> Lab. No.

All. 0 to 4 inches. Hight brownish gray (10YR 5.5/2 dry) to dark brown (10YR 3.5/3 moist and crushed) loamy 10841 sand; weak fine crumb structure; soft when dry, very friable moist; noncalcareous; lower boundary clear and smooth.

A12 4 to 10 inches. Brown (10YR 5/3 dry) to dark brown (10YR 3.5/3 moist and crushed) loamy sand; weak 10842 medium crumb structure; soft when dry, very friable moist; noncalcareous; lower boundary gradual, smooth.

AL3 10 to 15 inches. Brown (10YR 5/3 dry) to brown (10YR 4/3 moist and crushed) loamy sand; weak JUSFS medium subangular blocky structure; soft when dry, friable moist; noncalcareous; lower boundary clear and smooth.

15 to 19 inches. From (10YR 5/3 dry) to brown (10YR 4/3 moist and crushed) sandy loan; weak medium subangular blocky structure; slightly hard when dry, friable moist; very thin patchy clay skins on vertical faces of soil aggregates; noncalcareous; lower boundary clear and smooth. m 10844

19 to 28 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3/2.5 moist) brown (10YR 4/3 crushed) 10845 sandy loam; weak coarse prismatic structure breaking to weak coarse and few medium subangular blocks; very hard when dry, friable moist; thin patchy clay skins on both horizontal and vertical faces of the soil aggregates; noncalcareous; lower boundary clear and wayy.

28 to 33 inches. Light clive brown (1.25Y 5.5/4 dry) to clive brown (1.25Y 4/3 moist) (1.25Y 4.5/3) 10846 crushed) coarse loamy sand; very weak coarse subangular blocky structure; very hard when dry, friable moist; very thin patchy clay skins horizontal and vertical faces of soil aggregates; noncalcareous; lower boundary clear and smooth.

33 to 39 inches. Light yellowish brown (2.5Y 5.5/3 dry) to light olive brown (2.5Y 4.5/3 moist and 10847 crushed) coarse loamy sand; massive; hard when dry, friable moist; noncalcareous; lower boundary clear and smooth.

39 to 60 inches. Lighty yellowish brown (2.5Y 6/3 dry) to light clive brown (2.5Y 5/3 moist and crushed) 10848 coarse loamy sand; massive; hard when dry, friable moist; noncalcareous; lower boundary gradual and emonth.

60 to 88 inches. Light yellowish brown (2.5% 6.5/3 dry , 2.5% 6/3 moist and crushed) gravelly sand; massive; slightly hard dry, friable moist; noncalcareous; lower boundary clear C3 and smooth.

C4 88 to 105 inches. Pale yellow (2.5Y 7/3 dry) to light yellowish-brown (2.5Y 6/3 moist) sandy loam; massive; slightly hard dry, friable moist; nonceleareous, except for 2 thin seems of slightly calcareous material at 88-91 inch level. Lower boundary clear and smooth.

105 inches plus. Fale yellow (2.5Y 7/3 dry) to light yellowish brown (2.5Y 6/3 moist) coarse loany sand.

Bureau of Public Roads samples:

A12 4-10 inches B2t 19-28 inches CI. 39-60 inches

SOIL	SURVEY	LABORATORY	Lincoln, Nebr.	January 1960

SOIL TYPE * Bidou LOCATION Morgan County, Colorado loany sand

SOIL NOS. S59Colo-44-4 LAB. NOS. 10849-10857

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DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURA CLASS
		2-1	1-0.5	0.5-0.25	0. 25-0. 10	0.10-0.05	0.05-0.002	< 0.902	0.2-0.02	002-000 2	(<19mm)
Q-3	All.	4.0	11.6	20.5	42.5	11.7	6.5	3.2	35.7	2.8	Tr.	8
3-13	Al2	2.9	11.5	19.6	44.4	12.5	4.8	4.3	36.8	1.9	Tr.	8
13-17	Bl.	5.2	12.4	16.3	33.2	12.2	12.0	8.7	33.6	5.5	Tr.	ls
17-20	B21t	6.3	14.8	16.2	27.0	9.8	12.5	13.4	28.7	5.6	Tr.	sl
20-29	B22t	8.2	19.9	17.2	22.7	6.8	9.0	1.6.2	20.9	4.5	Tr.	cosl
29-34	B 3	6.5	20.3	19.5	27.1	7-3	7.7	11.6	21.9	4.2	Tr.	cosl
34-44	Cl	16.2	23.4	16.6	21.4	6.1	6.5	9.8	17.2	4.5	8	lcos
44-52	C2	15.2	22.9	18.2	23.4	5.8	6.5	8.0	17.6	4.1	9	lcos
52-60	C3	17.3	25.1	16.9	20.5	5.2	6.3	8.7	16.4	3.5	6	lcos
2649D3488888888734		<u> </u>		NIC MA		473 6 42 36 433341144644444	ELECTRI-		00+5-144000000-07-		URE TE	NSIONS
8cha 📑			6Ala	6Bla		EST% SALT	CAL CONDUC-					482
			ORGANIC	NITRO-		SALT (BUREAU	EC+103	CaCO ₃	GYP\$UM me./100g.	1/10	1/3	15
I	1:5	1,10	CARBON	GEN	C/N	CUP)	MILLIMHOS	aquiv- alent	SOIL.	ATMOS.	ATMOS.	ATMOS.
1:1			%	*			PER CM	76		.%	<u>, 5</u>	%
7.0			0.27	0.026	10			٥				1.6
7.5			0.22	0.023				۵				1.9
7.7			0.31.	0.037	8			ď				3.9
7.4			0.34	0.036				Q.			·	6.1
7.2			0.27	0.035				ď				6.8
7.4			0.15					Q				4.5
7.5			0.09					d				3.6
7.5			0.05					Þ				2.8
7.7			0.04					◁				3.3
Ala		EXTRAC	TABLE (ATIONS	5Bla	BASE SAT.	Bese	Sum	Sm	Ca/Mg		
CHANGE	6 M 2b	602ъ	6⊞а	6.P2a,	692a	****	Sat. %	Ext.	Ext.		O. D. Bulk	MOISTUR
HILAC	Co	Mg	н	No	K	CVAL	on Sum Cations	Bases	Cat- ions		Densilly	SATU- RATION
4		milliequiv	olonts per	100g. soli		5CL	· 5C3	5Bla	5A3a	.8p3	g/.cc.	%
3.3	2.3	0.7	1.2	<0.1	0.3	100	73	3.3	4.5			
3.6	2.7	0.9	0.5	<0.1	0.3	108	89	3.9	4.4			
6.9	5.3	1.4	1.0	<0.1	0.4	103	88	7.1	8.1	3.8		
9.9	7.7	2.3	1.4	<0.1	0.5	1.06	88	10.5	11.9	3.3		
1.7	9.0	2.7	1.0	0.1	0.5	105	92	15.3	13.3	3.3	1.81	
8.5	6.3	2.0	1.0	<0.1	0.3	101	90	8.6	9.6	3.2		
8.1	6.3	2.1	0.7	<0.1	0.2	106	92	8.6	9.3	3.0		
6.4	5.2	1.5	0.7	<0.1	0.2	108	91 94	6.9 7.8	7.6	3.5 3.4		
6.4	5.7	1.7	0.5	0.2	0.2	122	94	7.8	8.3	3.4		
neu ra pies peessyn coes troe es												
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Soil Type: "Bijou losmy sand Soil Nos .: 859Colo-44-4 Field classification: Brown.

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Location: 700 feet east, 550 feet south of west quarter corner, Sec. 16, T4N, R59W, Morgan County, Colorado.

Photo: YE-4F-196.

Climate: Continental, average annual precipitation 13-15 inches. Elevation 4,470 feet. Frost-free season 146 days. Mean annual temperature 48° F.

Vegetation: Blue grams, sand dropseed, sand sage, few annual weeds.

Parent material: Arkosic alluvium. Physiographic position: Terrace. Relief: Nearly level 0-1 percent slope Drainage: Slow external, rapid internal.

Moisture: Moist to 41 inches at time of sampling. Water table: None.

TO TO COLUMN

shout profile. Salt or alkali: None observed. Described by: Clayton F. Spears, May 5, 1959. Stoniness: Few small gravels throughout profile.

Brosion: Slight to none.

Remarks: Approximately same distance from Rijou Creek or source of alluvium as S59Colo-44-3. Many krotovinas

The Dord and Prot hear ald -t-alder

Horizon and Lincoln Lab No. O to 3 inches. Brown (10YR 5/3 dry) to dark brown (10YR 3.5/3 moist and crushed) loamy sand, very weak A13 fine crumb structure; soft when dry, very friable moist; noncalcareous; slightly more organic material or organic stain and more plentiful roots than horizon below; lower boundary clear and smooth. 10849 3 to 13 inches. Pale brown (10YR 5.5/3 dry) to brown (10YR 4/3 moist and crushed) losmy sand; very A12 10850 weak fine crumb structure; soft when dry, very friable moist; noncalcareous; lower boundary clear and smooth. 180 13 to 17 inches. Brown (10YR 5/3 dry) to dark brown (10YR 3.5/3 moist) dark gravish brown (10YR 4/2

10851 crushed) loamy and; weak medium subangular blocky structure, soft when dry, very friable moist; noncalcareous: lower boundary clear and smooth.

17 to 20 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3/3 moist) (10YR 3.5/3 crushed) sandy loam; B21t weak coarse prismatic structure breaking to weak medium and coarse subangular blocks; hard when dry, 10852 friable moist; thin patchy clay skins on vertical and horizontal faces of soil aggregates; noncalcareous; lower boundary clear and smooth.

B22t 20 to 29 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3/3 moist) few streaks dark grayish brown 10853 (10YR 4/2 moist) sandy loam; weak coarse prismatic breaking to weak medium and coarse subangular blocks; very hard when dry, friable moist; thin nearly continuous clay skins on both vertical and horizontal faces of soil aggregates; noncalcareous; lower boundary clear and wavy.

29 to 34 inches. Brown (10YR 5/3 dry, 10YR 4/3 moist) dark grayish brown (10YR 4/2 crushed) 10854 coarse sandy loam; weak coarse subangular blocky structure; hard when dry, friable moist; very thin patchy clay skins on vertical and horizontal faces of soil aggregates; noncalcareous; lower boundary clear and smooth.

34 to 44 inches. Light yellowish brown (2.5Y 6/3 dry) to olive brown (2.5Y 4/3 moist and crushed) 10855 coarse sandy loam; massive; slightly hard dry, friable when moist; noncalcareous; this horizon contains a few thin seems of clayey material and few small clay balls. Lower boundary clear and smooth.

œ light yellowish brown (2.5% 6/3 dry) to light clive brown (2.5% 5/3 moist) loamy coarse 10856 sand; massive; slightly hard when dry, friable moist; noncalcareous; lower boundary clear and smooth.

52 to 82 inches. Sampled 52 to 60 inches. Light yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) coarse sand; massive; slightly hard dry, friable moist; noncalcareous; lower boundary 03 10857 clear and smooth.

Ç4 82 to 114 inches. Hight yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) coarse and very coarse sand with some small gravels; noncalcareous.

Bureau of Public Roads samples:

A12 3-13 inches B22t 20-29 inches

44-52 inches **C2**

SOIL	SURVEY LABOR	ATORY Lincoln,	Nebr. 6	/26/58
SOIL	TYPE Bobtail gravelly lo	LOCATION	Grand Coun	ty, Colorado

SOIL NOS. 2749-2754

		, IBL	PARTI	CLE-SIZ	E DISTRIE	UTION (in	mm.) (pe	er cont;	3A1	,	4
HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			> 2	TEXTUR/ CLASS
	7-1	1-0.5	0.5-0.25	0. 25-0. 10	0.10-0.05	0.05-0.002	< 0.002	0. 2-0.02	0.02-0.002	: 	L
Ao-Aod	3 l. A				- (0 -	-0 -			
A2	14.9	15.4	7.0	12.1	7.6	35.0	8.0	28.7	20.0	ļ	cosl
בפ	27.0	18.0	7.5	13.9	0.0 7 A	24.2	0.5	25.0	14.6	ļ	cosl
C	25.8	21.1	8 8	17.4	7.1	18.0	カ・ユ ン・エ	22.4	11 2	ĺ	lcos lcos
D	30.1	17.8	6.0	71.4	6.7	10.7	8.0	20.1	10 3		cosl
		•			,						
H	of:1044(1)4(4)4(1				1,141+401051771011	***************	***************************************	***************************************	2492880F1021241488		}
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	Ao-Aoc A2 B2 B3 C D	HORIZON COARSE 2-1 AO-AOO A2 14.9 B2 21.8 B3 27.9 C 25.8 D 30.4	HORIZON COARSE SAND 2-1 1-0.5 AO-AOO A2 14.9 15.4 B2 21.8 17.3 B3 27.9 18.9 C 25.8 21.1 D 30.4 17.8 PM ORGA 1:5 1:10 CARBON 2.144 0.47	HORIZON COARSE SAND SAND SAND 2-1 1-0.5 0.5-0.25 AO-AOO A2 14.9 15.4 7.0 B2 21.8 17.3 7.5 B3 27.9 18.9 7.4 C 25.8 21.1 8.8 D 30.4 17.8 6.0 PM ORGANIC MA	HORIZON COARSE SAND SAND SAND SAND 2-1 1-0.5 0.5-0.25 0.25-0.10 AO-AOO A2 14.9 15.4 7.0 12.1 13.9 13.9 18.9 7.4 13.1 13.1 13.1 13.1 13.1 13.1 13.1 13	HORIZON COARSE SAND SAND SAND SAND SAND SAND SAND SAND	HORIZON COARSE SAND SAND SAND SAND SILT 2-1 1-0.5 0.5-0.25 0.75-0.10 0.10-0.05 0.05-0.007 AO-AOO A2 14.9 15.4 7.0 12.1 7.6 35.0 8.8 24.2 9.1 1.0.5 9.7.4 13.1 7.8 19.8 9.8 27.9 18.9 7.4 13.1 7.8 19.8 9.8 14.6 7.4 18.1 9.8 11.1 8.8 14.6 7.4 18.1 17.8 6.0 11.4 6.7 19.7 PM ORGANIC MATTER CARBON GEN C'N 8 2.44 .061 40 0.47 .030 16 0.27 0.32 10.22	HORIZON COARSE SAND SAND SAND SAND SILT CLAY 2.1 1.0.5 0.5-0.25 0.25-0.10 0.10-0.05 0.05-0.002 <0.002 AO-AOO A2 14.9 15.4 7.0 12.1 7.6 35.0 8.0 B2 21.8 17.3 7.5 13.9 8.8 24.2 6.5 B3 27.9 18.9 7.4 13.1 7.8 19.8 5.1 C 25.8 21.1 8.8 14.6 7.4 18.1 4.2 D 30.4 17.8 6.0 11.4 6.7 19.7 8.0 PH ORGANIC MATTER 1:5 1:10 CARBON GEN C'N 8 2.44 .061 40 0.47 .030 16 0.27 .013 21 0.22	HORIZON CÓARSE COARSE SAND SAND SAND SAND SAND SAND SAND SAND	HORIZON COARSE SAND SAND SAND SILT CLAY 2-1 1-0.5 0.5-0.25 0.75-0.10 0.10-0.05 0.05-0.007 <0.002 0.2-0.02 0.02-0.002 AO-AOO A2 14.9 15.4 7.0 12.1 7.6 35.0 8.0 28.7 20.0 B2 21.8 17.3 7.5 13.9 8.8 24.2 6.5 25.6 14.6 B3 27.9 18.9 7.4 13.1 7.8 19.8 5.1 22.4 12.0 C 25.8 21.1 8.8 14.6 7.4 18.1 4.2 21.6 11.3 D 30.4 17.8 6.0 11.4 6.7 19.7 8.0 20.1 12.3 PH ORGANIC MATTER 6A1s 6B1s ORGANIC MATTER 7.0 12.1 7.6 35.0 8.0 28.7 20.0 14.6 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	HORIZON COARSE SAND COARSE SAND SAND FINE SAND SAND SAND SAND SAND SAND SAND SAND

Soil Type: Bobtail gravelly loam Location: NW 1/4 of Sec. 8, 128, R76W, Grand County, Colorado. West St. Louis Creek. Physiographic Position: Upland.

Topography: Steeply sloping mountain side facing south. Drainage: Well drained.

Vegetation: Lodgepole pine. Use: National Forest Service land.

Collected and Described by: John L. Retzer, September 11, 1955.

Horizon and Lincoln Lab. No.

Ao - Aoo 2 to 0 inch. An organic layer made up of partially decomposed or undecomposed organic debris, mainly 2749 needles, twigs, bark.

O to 4 inches. Hight brownish gray (10YR 6/2 dry) to grayish brown (10YR 5/2 moist) gravelly loam; soft when dry, very friable when moist; weak to moderate medium platy structure; very strongly acid; approximate pH 4.7; lower boundary gradual and smooth. A2 2750

4 to 14 inches. Fale brown (10YR 6/3 dry) to brown or dark brown (10YR 4/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure; very strongly acid, approximate pH 4.9; lower boundary gradual and smooth. B2 2751

14 to 33 inches. Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; massive; strongly acid, approximate pH 5.3; lower boundary diffuse and smooth. B3 2752

33 to 56 inches. Very pale brown (10YR 7/3 dry) to pale brown (10YR 6/3 moist) partially weathered gneiss and schist bedrocks with the cracks between the stone filled with a gravelly loamy sand or 2753 sandy loam. Medium acid, approximate pH 5.8.

56 to 118 inches. Only slightly weathered fractured bedrock. Cracks between the rocks are filled with 2754 gravelly sandy loam weathered from the rocks themselves.

	803	IL NOS	• .					LAB.	NOS.	275	5-2760)	·
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			lBla		•			UTION (in	min-) (pe	r cent)	3A1		
INC	PTH HES	HORIZON	COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	*		> 2	TEXTURAL CLASS
		***	2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.03	0.05-0.002	< 0.002	0. 2.0.02	QQ2-QQQ 2		
2-		Ao-Aos A2		14.7	7.6	13.2	8.4	35.4	8.7	30.2	20.6		сов1
3-	.18	32	12.4	16.3	8.2	14.9	9.6	31.5	7.1	30.8 13.0	18.2		cosl
18- 42-		В3 С		20.6 19.0		8.3 15.8		11.0	8.8	26.4	9.4		lcos cosl
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Soil Type: Bobtail gravelly loam Location: NW 1/4 of Sec. 8, T2S, R76W, Grand County, Colorado. West St. Louis Creek. Physiographic Position: Upland, mountain slope.

Topography: Steeply sloping mountain side having a gradient of approximately 30 percent facing south.

Drainage: Well drained.

Vegetation: Principally lodgepole pine.

Use: National Forest Service land.

Collected and Described by: John L. Retzer, September 11, 1952.

Lincoln Lab. No.

Ao - Aoo 2 to 0 inches. An organic mat made up of partially decomposed or undecomposed forest litter mainly of 2755 pine needles, bark and twigs. Very strongly acid, approximate pH 5.0.

O to 3 inches. Grayish brown or light brownish gray (10YR 5.5/2 dry) to dark grayish brown or grayish-brown (10YR 4.5/2 moist) gravelly sandy loam; soft when dry, very friable when moist; very weak medium platy structure breaking to weak to moderate medium granules; very strongly acid, approximate pH 4.7; lower boundary clear and smooth. 2756

3 to 18 inches. Brown (10YR 5/3 dry) to brown to dark brown (10YR 4/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure; very strongly acid, approximate pH 4.8; lower boundary gradual and smooth. 2757

18 to 42 inches. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) gravelly 2758 loamy sand; slightly hard when dry, friable when moist; massive; medium acid, approximate pH 5.5; lower boundary diffuse and smooth.

42 to 54 inches. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) gravelly 2759 sandy loam; slightly hard when dry, friable when moist; massive; medium acid, approximate pH 5.7; lower boundary diffuse and smooth. This horizon contains a large amount of partially weathered bedrock fragments.

54 to 118 inches. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) gravelly loamy sand; this is a horizon of only partially weathered bedrock, gneiss, and schist, with some finer textured material in the cracks between the stones. 2760

SOIL	SURVE	Y LABORATO	RY Lincoln,	Nebr.	6/26/58		
SOIL	TYPE	Bobtail	LOCATION.	Grand	County,	Colorado	
		gravelly sandy l	Osia				
SOIL	NOS.		LAB.	NOS.	2773-277	77	

> 2 20.3 15.4 12.6 7.2	cosl cosl cosl cos cos
20.3 15.4 12.6 7.2	sl cos
15.4 f 12.6 s 7.2	sl cos
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١	3.8 2.8 3.2

Soil Type: Bobtail gravelly sandy loam Location: Along road 3 in the NE 1/4 of Sec. 10, TPS, R76W, Grand County, Colorado. Fool Creek. Hydiographic Position: Upland.

Topography: Steeply sloping mountain side facing west. Drainage: Well drained. Vegetation: Lodgepole pine.

Use: National Forest Service land.

Collected and Described by: John L. Retzer, July 24, 1952.

Horizon and Lincoln Lab. No.

Ao - Aoo 1 to 0 inch. An organic mat made up of partially decomposed and fresh needles, roots, bark and twigs.

O to 5 inches. Grayish brown or light brownish gray (10YR 5.5/2 dry) to dark grayish brown or grayish brown (10YR 4.5/2 moist) gravelly sandy loam; soft when dry, very friable when moist; weak fine platy structure breaking to weak moderate fine granules; very strongly acid, approximate pH 4.7; lower 2773 boundary gradual and smooth.

5 to 16 inches. Brown (10YR 5/3 dry) to brown or dark brown (10YR 5/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure; strongly acid, approximate pH 5.2; lower boundary gradual and smooth. B2 2774

16 to 24 inches. Hight clive brown (2.5Y 5/4 dry) to clive brown (2.5Y 4/4 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; massive; strongly acid, approximate pH 5.1; lower boundary diffuse and smooth. B3 2775

24 to 45 inches. Light olive brown (2.5Y 5/4 dry) to olive brown (2.5Y 4/4 moist) very gravelly sandy loam; slightly hard when dry, very friable when moist; massive; strongly acid, approximate pH 5.5; lower boundary diffuse and smooth. 2776

45 to 71 inches. Hight olive brown (2.5Y 5/4 dry) to olive brown (2.5Y 4/4 moist) gravelly sandy loam; strongly to medium acid; approximate pH 5.6; this is partly weathered bedrock. 2777

SOIL	SURVEY	LABORATORY Lincoln, Nebr. 6/26/58
SOIL	TYPE	obtail LOCATION Grand County, Colorado avelly sandy loam
SOIL	nos.	LAB. NOS. 2778-2781

	1	1Bla		PARTI	CLE SIZ	E DISTRIB	UTION (in	mun.) (pe	r cent)	_3A1		
DEPTH INCHES	HORIZON	i	3	i	FINE SAND	VERY FINE SAND	SILT	CLAY			> 2	TEXTURA CLASS
0-5		2-1	1-0.5		:		0.05-0.002	< 0.002 6.0	:			
5-16	Cl	29.5 30.2	13.2 18.9	5.9 7.7	10.4 12.0 16.1 14.2	8.7 8.6	32.5 25.2 13.8 19.9	5.5 4.7	27.7 22.7 26.1	17.9 13.0 8.1 10.6		cosl cosl lcos lcos
	ρΗ		ORG	AKIC MĄ	TTER				,			
8Cla	1:5	1:10	6Ala Organic Carbon	MITRO- GEN	C/N							
<u>!:!</u>				%		•••						
4.9 5.2 5.8 6.0			1.72 0.33 0.18 0.15		37 16							dispersation of the second control of the se
	***************************************	EXTRAC	TABLE	CATIONS	5Bla	BASE	5 23e		MAGINIMANIA ACAD	\$+ \$+\$************	. 8 D 3	
	7,2	·	6нца	7-4	7-2-	SAT. NHPA:	Sat. %	5Bla	5A3a		Ca/Ma	1

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Soil Type: Bobtail gravelly sandy loam Location: NW 1/4 of Sec. 10, T2S, R76W, Grand County, Colorado. Fool Creek. Physiographic Position: Upland.

Topography: Steeply sloping mountain side facing west.

Drainage: Well drained. Vegetation: Indgepole pine.

Use: National Forest Service land.

Collected and Described by: John L. Retzer, July 31, 1952.

Horizon and Lincoln Lab. No.

1 to 0 inch. An organic mat made up of undecomposed and partially decomposed needles, bark, twigs, An - Ann and roots.

O to 5 inches. Light brownish gray (10YR 6/2 dry) to grayish brown (10YR 5/2 moist) gravelly sandy losm; soft when dry, very friable when moist; very weak medium platy structure breaking to weak to moderate fine granules; very strongly acid, approximate pH 4.6; lower boundary gradual and smooth. 2778

5 to 16 inches. Brown (10YR 5.5/3 dry and 10YR 4.5/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure; very strongly acid, approximate pH 4.9; lower boundary gradual and smooth. B2 2779

16 to 43 inches. Light yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) gravelly 2780 sandy loam; slightly hard when dry, very friable when moist; massive; strongly acid, approximate pH 5.1; lower boundary gradual and smooth.

43 to 69 inches. Light yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; massive; strongly acid, approximate pH 5.5. This profile had a water table at 69 inches. **c**2 2781

SOIL SURVE	Y LABORATORY Lincoln, Nebr. 6/26/58
	Bobtail LOCATION Grand County, Coloredo gravelly sandy loam
SOTT, NOS.	LAB. NOS. 2782-2786

SOIL NOS.

<u>, ;</u>

1Bla PARTICLE SIZE DISTRIBUTION (in mm.) (per cent) 34] HORIZON COARSE COARSE MEDIUM SAND SAND SAND VERY FINE SAND TEXTURAL CLASS FINE SILT CLAY > 2 < 0.002 0.2-0,02 0.02-0.002 2-1 1-0.5 0.5-0.25 0.25-0.10 0.10-0.05 0.05-0.002 10.6 8.3 8.5 6.6 5.0 6.7 22.3 0-6 A2 12.3 13.3 42.0 40.6 1 15.8 18.6 fsl 6-16 B2 10.5 9.4 15.0 36.0 42.1 12.2 8.3 26.9 5.3 6.2 37.7 40.6 15.7 16.6 18.6 15.0 16-27 B3 13.7 cosl 27**-35** 35**-**59 6.1 11.4 10.0 23.0 15.7 27.6 fsl C1 16.0 8.3 30.2 5.4 D 13.6 15.3 11.2 30.9 19.4 cosl ORGANIC MATTER pΗ 8Cla 6Ala 6Bla ORGANIC NITRO-CARBON GEN 1:10 C/N 1:5 1:1 1.25 .042 4.7 30 15 0.38 .025 5.2 5.5 5.9 6.5 0.22 .019 0.12 0.09 503 Bese SBIA" 5A3a BB3 EXTRACTABLE CATIONS 5818 BASE SAT. 5Ala CATION EXCHANGE CAPACITY INHLAC Sat. % 602a 602ъ 6HLa 6P2s NH₁Ac Sum Sum Ca/Mg 6N2b on Sum Cations Bases **291.** Cations me/100g me/100g 3.3 0.7 4.5 7.4 38 11.9 0.1 0.4 30 no it Q 11. 28. <u>17</u> l ha! - 12 7

Soil Type: Bobtail gravelly sandy loam Location: NW 1/4 of Sec. 10, T2S, R76W, Grand County, Colorado. Fool Creek. Physiographic Position: Upland.

Topography: Steeply sloping mountain side facing east. Drainage: Well drained.

Vegetation: Lodgepole pine. Use: National Forest Service land. Collected and Described by: John L. Retzer, July 21, 1952.

Horizon and Lincoln Lab. No.

Ao - Aoo 12 to 0 inch. An organic mat made up of undecomposed and partially decomposed forest refuse mainly

needles, bark, twigs.

0 to 6 inches. Light brownish gray (10YR 6/2 dry) to grayish brown (10YR 5/2 moist) gravelly loam; 2782 soft when dry, very friable when moist; weak medium platy structure; very strongly acid, approximate

pH 4.7; lower boundary gradual and smooth.

B2 6 to 16 inches. Brown (10YR 5.5/3 dry and 10YR 4.5/3 moist) gravelly sandy loam; slightly hard when

pH 5.2; lower boundary gradual and smooth.

B3 2784 16 to 27 inches. Light yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) gravelly sandy loam; loose when dry or moist; massive; medium acid, approximate pH 5.6; lower boundary clear and smooth.

27 to 35 inches. Light yellowish brown (2.54 6/4 dry) to light clive brown (2.54 5/4 moist) gravelly sandy loam; very hard when dry, very firm when moist; massive; medium acid, approximate pH 5.8; this is a horizon of partially weathered bedrock. CT. 2785

35 to 59 inches. Light yellowish brown $(2.5Y\ 6/4\ dry)$ to light olive brown $(2.5Y\ 5/4\ moist)$ were weakly weathered gnelss and schist bedrock. 2786

SOIL	SURVEY	LABORATORY Lincoln, Nebr. 6/26/58
SOIL	TYPE	Bobtail LOCATION Grand County, Colorado gravelly sandy loam
	GOTT. MOG	LAR NOS 2787-2790

			JBJa.		CL C 312	E DISTRIB		Burney 75	e cons	ينجر		į
DEPTH INCHES	HORIZON	VERY COARSE SAND 2-1	COARSE SAND 1.0.5	t ,		VEPY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY	0. 2-0.02	002.0002	> 2	TEXTURA
0-5 5-18 18-26 25-58	A2 B2 C1. Dr	10.0	7.9 11.3	6.6	13.6	11.9	42.0 34.5 30.2	8.0 3.8	37.1	24.5 19.8		l fsl fsl lcos
3Cla	pH 1:5	**************************************	ORG/ 6Ala ORGANIC CARBON		TTER C'N	IABespibdipsro zabak	-84449011057-4, 6122855	***************************************	# # ##################################	***************************************	Trirra razýr k apa dů	### ##################################
4.7 5.0 5.1 5.4			1.04 0.26 0.15 0.12	.014	27 18	-	•					
5 81 8		EXTRAC	TABLE	CATIONS	,	BASE SAT.	Base Sat S	581a Sim	5A3a .	p. 4 + 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Ca /Mo	A substitution of the subs

Soil Type: Bobtail gravelly sandy loam Location: NW 1/4 of Sec. 10, T25, K76W, Grand County, Colorado. Fool Creek. Hysiographic Position: Upland.

Topography: Steeply sloping mountain side, facing east.

Drainage: Well drained. Vegetation: Lodgepole pine.

Use: National Forest Service land.

Collected and Described by: John L. Retzer, July 21, 1952.

Horizon and Lincoln Lab. No.

Ao - Aoo 2 to 0 inch. An organic mat made up of pine needles, bark and roots.

O to 5 inches. Grayish brown or light brownish gray (10YR 5.5/2 dry) to dark grayish brown or grayish brown (10YR 4.5/2 moist) gravelly loam; soft when dry, very friable when moist; weak fine platy breaking to moderate fine granular structure; very strongly acid, approximate pH 4.9; lower 2787 boundary gradual and smooth.

5 to 18 inches. Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; massive; strongly acid, approximate pH 5.2; lower boundary gradual and smooth. B2 2788

18 to 26 inches. Light yellowish brown (2.5Y 6/4 dry) to light olive brown (2.5Y 5/4 moist) gravelly 2789 sandy loam; very hard when dry, very firm when moist; massive; strongly acid, approximate pH 5.1; this horizon is the upper part of the bedrock and is mainly weathered rock; lower boundary diffuse and

26 to 58 inches. Light yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/4 moist) fractured Dr 2790 bedrock with gravelly sandy loam in the fractures.

SOIL SURVE	Y LABORATORY	Lincoln, Neb	r. 6/26/58	
	Bottle LOC gravelly sandy loam	CATION	Grand County,	Colorado
SOIL NOS.		LAB. N	os. 2761-2	763

			lBla.	PARTI		E DISTRIB	II) MCITU	mm.) (pe	r ceni)	_3 A1		İ
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			> 2	TEXTUR CLASS
		2-1	1-0.5	0.5-0.25	0. 25-0. 10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	005-0005		L
2-0 0-7 7-28	Ao A2 B2	5.2 5.4	4.8 5.5		28.9 33.1	18.4 14.4	30.5 23.2	3.0 3.8	51.7 41.2	14.6 9.5		fsl fsl
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Hq	1401c292169211 1 00	ORG	MIC MA	TTER	81868443884989222018	\$\$1378 \$ \$10 \$ \$1.1713 \$\$ \$\$. D[2*Peri+*D\$Pery)	***********	gg 1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1) To: 4941 341 444	**************************
8Cla			6Ala	6Bla								
Te 3	1;5	1:10	ORGANIC CARBON	NITRO- GEN	C/N			. <u>-</u>	•			
4.8			0.87	.027	32	*****						
5.1			0.36	.019	19							
		*********		**********	411114444	***************************************	******************	D:1480FP4;:+:#348g	**************************************			2002004000000
5Ala		-	TABLE	i _		BASE SAT.	Base		5 A3a			
CATION KCHANGE LPACITY NH _{JL} AC	C. (1)(2)	602b	6Hla H	6P2a No	6 92a. K	Not AC	ations		Sum Cation	ß	Ca/Mg	
		milliequiv	alents per	100g. soil	 →	501	.5C3	me/ 10 0g	medC0g			
	21.9	0.1		0.3	2.8	48		25.1				
4.9	1.4	0.1	3.0	0.1	0.2	37 35	3 8		4.8			
3.4	0.9	0.1	2.4	0.1	0.1	35	33	1.2	3.6			
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Soil Type: Bottle gravelly sandy loam
Location: SW 1/4 of Sec. 3, T2S, R76W, Grand County, Colorado. Fool Creek Watershed.
Rhysiographic Position: Upland.
Topography: Steeply sloping mountain side facing north.
Drainage: Well drained.
Vegetation: Lodgepole pine.
Like: National Expert Securice longs

Use: National Forest Service lands.

Collected and Described by: John L. Retzer, September 2, 1949.

Lincoln Tab. No.

Aoo 4 to 2 inches. Mat of undecomposed pine needles, twigs, bark, roots and branches.

2 to 0 inch. Very dark gray (10YR 3/1 dry) to black (10YR 2/1 moist) fibrous mat of partially decayed organic matter mixed with a small amount of mineral soil; very strongly acid, approximate pH 4.8. Ao 2761

0 to 7 inches. White (10YR 8/1 dry) to light gray (10YR 6/1 moist) gravelly sandy loam; soft when dry, very friable when moist; moderate fine platy structure; extremely acid, approximate pH 4.4; lower A2 2752 boundary clear and smooth.

B2 2763 7 to 28 inches. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; weak fine subangular blocky structure breaking to weak coarse granules; very strongly acid, approximate pH 4.6. This horizon grades downward into only weakly weathered Dakota sandstone.

SOIL SURVEY LABORA	TORY Lincoln,	Nebr.	6/26/58	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
SOIL TYPE Bottle gravelly sand		Grand	County, Colorado	4-44 · 1-92844
SOIL NOS.	! A 🛱	NOS	2764-2767	

			lBla	PARTI	CLE SIZ	E DISTRIE	UTION (in	mm.) (p	e cent)	3A	L	
DEPTH INCHES	HORIZON	VERY COARSE SAND	COAPSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			> 2	TEXTURA CLASS
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-6.62	002-0 00 2		
2-0	AO-AO	•					<u> </u>	Í	Ì	i		İ
0-3	A2		10.2	8.0	18.2		32.9	9.5	35.9	15.6		sl
3-13	B2	9,8			25.8		28.0	8.9	36.3	15.1		fal
13-19	вз	10.7	11.6	12.2	27.1	7.8	17.6	13.0	31.1	9.4		51
esen odmiston odki	A	***************************************	***************************************		31 Daggieri (page 300		**************************************			-		
	ρH			NIC MA	TTER			1				
8CLa	1;5	1:10	GALB ORGANIC CARBON		C/N							
			*	. %								
4.6 4.9 4.9			3.56 1.02 1.35	.113 .046 .048	122		er eine er en retter de la companya	1 d a to dop different della construction of the construction of t				
							1	-				
Ala		EXTRAC	TABLE	CATIONS	SEL A	BASE SAT.	Base	5Bla	543a		8103 Ca/Mg	1
CATION XCHANGE APACITY Na _L Ac	6 1112 15 Co	602b **•	6 Н).а. Н	6 P2a No	602m K	NE ₄ /c	Set. % on Sum Cations	Sum Bases	Sum Cation	8	Ca/Mg	
	•									: :		Ė
		W 11110401A	alents per	icug, soil	·	5C1	503	be/ 100g	me/100	Og		L

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Soil Type: Bottle gravelly sandy loam Location: SW 1/4 of Sec. 3, T2S, R76W, Grand County, Colorado. West St. Louis Watershed. Physiographic Position: Upland.

Thysicgraphy: Steeply sloping mountain side facing north. Drainage: Well drained.

Vegetation: Spruce and fir.

Use: National Forest Service lands.

Collected and Described by: John L. Retzer, August 31, 1959.

Horizon and Lincoln Lab. No.

2 to 0 inch. A forest litter made up of undecomposed and partially decomposed forest refuse, prin-Ao - Aoo

2764 cipally needles, twigs and roots.

O to 3 inches. Light gray (10YR 7/2 dry) to light brownish gray (10YR 6/2 moist) gravelly sandy loam; soft when dry, very friable when moist; moderate fine platy structure; very strongly acid, approximate pH 4.6; lower boundary clear and smooth. A2 2765

3 to 13 inches. Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; weak fine subangular blocky structure; very strongly acid, approximate pH 4.6; lower boundary clear and smooth. Approximately 20 percent of this horizon B2 2766

is stone.

13 to 19 inches. Hight yellowish brown (10YR 6/4 dry) to dark yellowish brown (10YR 4/4 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; massive; very strongly acid, approximate PR 4,9; approximately 20 percent of this horizon is stone, and the horizon syndam downward into only B3 2767

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	SOIL TYPE Bottle LOCAT	ION Grand C	ounty, Colorado	
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	SOIL NOS.	LAB. NOS	2768-2772	***
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	1818 PARTICLE-SIZE DISTRIE	SUTION (in mm.) (per	centy 3A1	
	DEPTH VERY VERY	1	TEXTURAL	L
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Soil Type: Bottle gravelly sandy loam

Location: SW 1/4 of Sec. 3, T2S, R76W, Grand County, Colorado. West St. Louis Creek Watershed. Physiographic Position: Upland.

Topography: Steeply sloping mountain side facing north. Drainage: Well drained.

Vegetation: Spruce and fir.

Use: National Forest Service land. Collected and Described by: John L. Retzer, August 31, 1949.

Horizon and Lincoln Lab. No.

4 to 2 inches. Undecomposed forest litter made up of needles, twigs, roots, and bark. Aρο

2 to 0 inch. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) fibrous orgains mat made up of partially weathered forest debris mixed with a small amount of mineral matter. Ao 2768 Very strongly acid, approximate pH 4.9.

0 to 6 inches. Hight gray (10YR 7/1 dry) to gray or light gray (10YR 6/1 moist) gravelly loam; soft when dry, very friable when moist; moderate fine platy structure; very strongly acid, approximate pH 4.5; approximately 5 percent of this horizon is rock; lower boundary clear and smooth. 2769

6 to 24 inches. Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3 moist) gravelly sandy losm; slightly hard when dry, very friable when moist; weak to moderate medium subangular blocky structure; very strongly acid, approximate pH 4.6; approximately 30 percent of this horizon is rock; lower **B2** 2770 boundary gradual and smooth.

B3 2771 24 to 34 inches. Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; massive; very strongly acid, approximate pH 4.8; approximately 40 percent of this horizon is rock; lower boundary gradual and smooth.

34 to 48 inches. Light brownish-gray (10YR 6/2 dry) to grayish brown (10YR 5/2 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; massive; strongly acid, approximate pH 5.2; approximately 50 percent of this horizon is rock and the horizon grades downward into unweathered sand-C 2772 stone bedrock.

SOIL SURVEY LABORATORY Lincoln, Nebr. 3/17/58

SOIL TYPE Bottle LOCATION Grand County, Colorado fine sand

SOIL NOS.

\$550010-25-2 LAB. NOS. 2873-2876

			PARTI	CLE SIZ	E DISTRIE	UTION (in	mm.) (pe	r cent)	381		
HORIZON	VERY CDARSE SAND 2-1	COARSE SAND	SAND	SAND	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	0, 2-0.02	:	> 2	TEXTURA CLASS
Ao A2 B2ir C	1.1 2.4 3.1	4.4	13.7 10.1	42.8 54.8	9 .3 11.8	25.1	3.7	43.1 50.7	12.8 6.6	6 13	fsl lfs fs
р Н 1:5	1:10	6ALE	ORLA		Free Iron Fe ₂ 03	h hat4444.6442.3441144	980166VIASI69044		4Bla	4Ble	NSIONS 4B2 15 ATMOS.
		*	93		%				%	*	5
1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			.029 .010 .007	33 25	0.4 0.5 0.3		en da jeden pade rinda valoren production		14.8 8.6 5.0	9.4 5.0 2.6	2.5 1.4 1.0
	Ao A2 B2ir C	HORIZON CDARSE SAND 2:1 A0 A2 1.1 B2ir 2.4 C 3.1	PORIZON COARSE SAND 2:1 1.0.5 AO A2 1.1 4.3 B21r 2.4 4.4 C 3.1 3.6 PH ORG 6Ala 1:5 1:10 CARBON 7 0.97 0.25	PORIZON COARSE SAND SAND SAND 2.1 1.0.5 0.5-0.25 AO A2 1.1 4.3 13.7 B21r 2.4 4.4 10.1 C 3.1 3.6 10.1 PH ORGANIC MA GALE ORGANIC MA GALE ORGANIC MA NITRO-CARBON GEN % 0.97 .029 0.25 .010	PH ORGANIC MATTER 1.5 1:10 CARBON CARBO	HORIZON COARSE SAND SAND SAND SAND SAND 2.1 1.0.5 0.5-0.25 0.25-0.10 0.10-0.05 AO A2 1.1 4.3 13.7 42.8 9.3 B2ir 2.4 4.4 10.1 54.8 11.8 C 3.1 3.6 10.1 67.7 9.1 PH ORGANIC MATTER FILE FOR SAND SAND SAND SAND SAND SAND SAND SAND	HORIZON CDARSE SAND SAND SILT SAND SAND SILT SAND 2.1 1.0.5 0.5-0.25 0.25-0.10 0.10-0.05 0.05-0.002 AO A2 1.1 4.3 13.7 42.8 9.3 25.1 B2ir 2.4 4.4 10.1 54.8 11.8 12.7 C 3.1 3.6 10.1 67.7 9.1 4.6 PM ORGANIC MATTER FOLE TO DEGANIC MITRO-CARBON GEN C/N Fe203 % 0.97 0.25 0.10 25 0.5	HORIZON COARSE SAND SAND SILT CLAY 2.1 1.0.5 0.5-0.25 0.25-0.10 0.10-0.05 0.05-0.002 <0.002 AO A2 1.1 4.3 13.7 42.8 9.3 25.1 3.7 B21r 2.4 4.4 10.1 54.8 11.8 12.7 3.8 C 3.1 3.6 10.1 67.7 9.1 4.6 1.8 PH ORGANIC MATTER FILE 6Ala ORGANIC MATTER FILE 1:5 1:10 CARBON GEN C/N Fe203 7 0.25 0.10 25 0.5	HORIZON COARSE SAND SAND SILT CLAY 2.1 1.0.5 0.5-0.25 0.25-0.10 0.10-0.05 0.05-0.002 <0.002 0.2-0.02 AO A2 1.1 4.3 13.7 42.8 9.3 25.1 3.7 43.1 B21r 2.4 4.4 10.1 54.8 11.8 12.7 3.8 50.7 C 3.1 3.6 10.1 67.7 9.1 4.6 1.8 51.0 PH ORGANIC MATTER FILE GALE ORGANIC MITRO- C/N Fe203 7 7 0.25 0.00 25 0.5 0.5 0.5 0.5 0.5 0.5 0.05 0.0	PORIZON COARSE SAND SAND SAND SILT CLAY 2.1 1.0.5 0.5-0.25 0.25-0.10 0.10-9.05 0.05-0.002 0.2-0.02 0.2-0.02 0.2-0.02 0.2-0.002 AO A2 1.1 4.3 13.7 42.8 9.3 25.1 3.7 43.1 12.8 B21r 2.4 4.4 10.1 54.8 11.8 12.7 3.8 50.7 6.6 C 3.1 3.6 10.1 67.7 9.1 4.6 1.8 51.0 2.4 4.6 1.8 51.0 2.4 4.6 1.8 51.0 2.4 51.	HORIZON COARSE MEDIUM FINE SAND SILT CLAY > 2 > 2

Soil Type: Bottle fine sand

Soil Nos.: 855Colo-25-2

Location: Approximately the SE quarter of the SW quarter of Sec. 3, 128; R76W; Grand County, Colorado.

Physiographic Position: Steeply sloping mountain side.

Topography: Strongly sloping convex side hill of approximately 35 percent gradient facing north. Drainage: Well drained.

Vegetation: Lodgepole pine and weak undercover of brush and sedge.
Collected by: James Allen, A. Aandahl, J. Retzer, E. M. Payne, A. J. Cline, and H. Bindschadler, October 9, 1955.

Horizon and Lincoln Lab. No.

Aoo

2 to 13 inches. Undecomposed needle mat.

2873

 $1\frac{1}{2}$ to 0 inch. Very dark gray to very dark grayish brown (10YR 3/1.5 dry) to black or very dark brown (10YR 2/1.5 moist) partially decomposed organic material ranging in thickness from 3 to 6 inches; lower boundary clear and smooth.

287L

O to 6 inches. Light gray (10YR 7/1.5 dry) to light gray or light brownish gray (10YR 6/1.5 moist) fine sands; soft when dry, very friable when moist; weak very coarse platy structure breaking to weak to moderate fine and medium crumb structure; strongly acid; lower boundary abrupt and wavy.

RATE 2875 6 to 11 inches. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) loamy fine sand; soft when dry, very friable when moist; weak fine and medium subangular blocky structure breaking to weak, medium or coarse granules; the horizon contains many medium-sized distinct 7.5YR 4/4 mottles; the horizon ranges in thickness from 5 to 8 inches; lower boundary clear and wavy.

2876

11 to 33 inches. Very pale brown (10YR 7/3 dry) to pale brown (10YR 6/3 moist) partially weathered sandstone base rock; about 85 percent of the entire mass is made up of unweathered rock fragments.

SOIL Bresser sandy loam

SOIL Nos. S61Colo-3-9 LOCATION Arapahoe County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska

___ LAB. Nos. <u>15550-15556</u>

February 1965

		131							s and parti	cle diamet	er (mm)	Al.						
]		Total					Sand		Si	It			(3)	AY	Coa	arse fragme	nts 2/
Depth	Horizon	Sand	Silt	Clay	Very	Coarse	Medium	Fine	Very fine		Int. III	Int. II				i T		
(in.)	HOIZON	(2-0.05)		(= 0.002)	coarse			1		0 05-0 02			(2-0.1)		Noncer	>- 2	2 - 19	19-
,,,,,	l	(2 5.55)	0.002)	1 - 0.002	(2-1)				(0.1-0.05)	0.03-0.01	0.002)	(0.2-0.02)	(2-0.1)	ate	bonate	l		t. of _
	 		(01)	1 5 5	T & &		t. of << 2			137.3		00.0	7	<u> </u>	└ ─	Pct.		76mm
0-6 6 - 10	Al. Bl	70.9 70.8	21.4 14.4	7.7	9.0 7.4	26.6	14.0 14.8	15.7	5.6 6.4	16.1 9.8	5.3 4.6	28.0	65.3 64.4	1		Tr.	İ	
10-18	B2t	65.4	14.8	19.8	6.1	19.7	13.9	22.0 19.9	5.8	9.1	5.7	25.7 23.1	59.6	!		Tr.		1
18-29	B3	75.8	11.0	13.2	4.0	16.7	16.9	20.0	8.3	7.6	3.4	28.7	67.5	-	-	Tr.	+	
29-40	cī	88.8	4.1	7.1		32.8	21.5	29.9 21.6	5.4	2.5	1.6	15.9	83.4	1		Tr.	İ	ł
40-52	C2	89.7	3.5	7.1 6.8	7.5 8.3	32.3	20.4	24.2	4.5	2.1	1.4	16.0	85.2	}		Tr.	1	
52-62	C3	90.0	3.7	6.3	8.7	28.3	22.3	25.9	4.8	2.1	1.6	16.9	85.2			Tr.		
	ļ		<u>.</u>					<u> </u>								<u> </u>	<u> </u>	_
	6Ala	6Bla		1	6Ele	6Cla		Bulk densit	y	4 DOL	 	ater conte	nt .				pH	8c1
Depth	Organic		C.M.	1	_	· .		4Ale	4A1b	COLE	4B3		4B2	ĺ		i	T	Γ
(in.)	carbon	Nitrogen	C/N		Carbonate as CaCO ₂	Ext.	f		Air-	<u>b</u>						I	l	
,,	1	l		ļ	, ,	Iron		30-Cm.	Dry	_	30-сл.	1/3-Bax	15-Bar		l I	I	1:10	(1:1
	8	Į.	l	l		as Pe	l	Į į			ľ			l		ı	1	ţ
	Pct.	Pct.		L	Pct,	Pet.	g/cc	g/cc	g/cc		Pct.	Pct.	Pct.	L		<u> </u>	 	ļ,_
0-6 6-10	1.01	0.073	14		1	0.4	ł	1 50	1.62	0.07	33. 1.		3.5			l	6.7	6.3
6-10 10-18	0.62	0.066	10		İ	0.5		1.50	1.58	0.07	14.4 15.4		6.0 8.1			l	6.7	6.8
18-29	0.20	0.026	10	-	-	0.4		4.21	12.09	0.19	12.4		4.8	<u> </u>	 		7.0	
59-70 70-53	0.25	10.020]	1	- :	0.2		1.70	1.78	0.15	11,2		2.5			!	7.1	7.1 7.1
40-52	0.03			1	1 []		l .	1.,0	1.72	VI.5.	٠٠٠٠ [3.0			ĺ	7.2	7.5
52-62	0.01			1	-	0.3					T		3.0 2.8		Г		7.2	7.5
		Extractat	le bases	5Bla		6на		Exch.			Ì				8D3		Base sat	_
Depth	6 №2 ъ	602ъ	6P2a	602a		ا ا	C	ap.			İ				ایرا		5C3	5C3
(in.)	Ca		Na	K	Stum	Ext. Acidity	5A3a	DALA			1				Ca/Mg		Sum	
		Mg		1	Į į			ME OAC									Ostalone Pct.	Pct.
				106	meq/100 g 5 · 3	2.5	7.8	6.3	-						3.3		68	84
0-6	3.6	1.1	Tr.	1 0.0			77.2	9.4	ł	l	l			I	3.2	ı		96
0-6 6-10	3.6 6.5	1.1	Tr.	0.6	9.0	2.3											1 00	
6-10 10-18	3.6 6.5 9.6	1.1 2.0 3.2	Tr. Tr. Tr.	0.5	9.0 13.3	2.3	11.3 15.6	13.3							3.0		80 85	100
6-10 10-18 18-29	6.5 9.6 5.5	2.0 3.2 2.0	Tr. Tr.	0.5 0.5 0.2	7.7	2.3	8.4	7.7							3.0 2.8		85	100
6-10 10-18 18-29 29-40	6.5 9.6 5.5 3.8	2.0 3.2 2.0 1.2	Tr. Tr. Tr.	0.5 0.2 0.2	13.3 7.7 5.2	2.3 0.7 0.5	8.4 5.7	13.3 7.7 5.2							3.0 2.8 3.2		85	100 100 100
6-10 10-18 18-29 29-40 40-52	6.5 9.6 5.5 3.8 4.1	2.0 3.2 2.0 1.2 1.2	Tr. Tr. Tr. Tr.	0.5 0.2 0.2 0.2 0.2	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2	8.4 5.7 5.7	13.3 7.7 5.2 5.4							3.0 2.8 3.2 3.4		92 91 96	100 100 100
6-10 10-18 18-29 29-40	6.5 9.6 5.5 3.8	2.0 3.2 2.0 1.2	Tr. Tr. Tr.	0.5 0.2 0.2	13.3 7.7 5.2	2.3 0.7 0.5	8.4 5.7	13.3 7.7 5.2							3.0 2.8 3.2		85	100 100 100
6-10 10-18 18-29 29-40 40-52	6.5 9.6 5.5 3.8 4.1	2.0 3.2 2.0 1.2 1.2	Tr. Tr. Tr. Tr.	0.5 0.2 0.2 0.2 0.2	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5	40 ino						3.0 2.8 3.2 3.4		92 91 96	100 100 100
6-10 10-18 18-29 29-40 40-52 52-62	6.5 9.6 5.5 3.8 4.1 3.3	2.0 3.2 2.0 1.2 1.2 1.0	Tr. Tr. Tr. Tr. Tr.	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5	40 inc		tens1b	ility.			3.0 2.8 3.2 3.4		92 91 96	100 100 100
6-10 10-18 18-29 29-40 40-52 52-62	6.5 9.6 5.5 3.8 4.1 3.3	2.0 3.2 2.0 1.2 1.2 1.0	Tr. Tr. Tr. Tr. Tr.	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	ility.			3.0 2.8 3.2 3.4		92 91 96	100 100 100
6-10 10-18 18-29 29-40 40-52 52-62 Depth (In.)	6.5 9.6 5.5 3.8 4.1 3.3 Ratios	2.0 3.2 2.0 1.2 1.0 to Cl Ext. Iron	Tr. Tr. Tr. Tr. Tr. Tr. Tr. Tr.	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	llity.			3.0 2.8 3.2 3.4		92 91 96	105 100 100 100
6-10 10-18 18-29 29-40 40-52 52-62 Depth (In.)	6.5 9.6 5.5 3.8 4.1 3.3 Ratios	2.0 3.2 2.0 1.2 1.0 1.0	Tr. Tr. Tr. Tr. Tr. Tr. Cr. Tr. Cr. Tr.	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	ility.			3.0 2.8 3.2 3.4		92 91 96	105 100 100 100
6-10 10-18 18-29 29-40 40-52 52-62 Depth (In.)	6.5 9.6 5.5 3.8 4.1 3.3 Ratios NH,OAc CEC	2.0 3.2 2.0 1.2 1.0 to CI Ext. Iron 0.05 0.03 0.03	Tr. Tr. Tr. Tr. Tr. Tr. Cr. Tr. O.40	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	llity.			3.0 2.8 3.2 3.4		92 91 96	105 100 100 100
6-10 10-18 18-29 29-40 40-52 52-62 Depth (In.)	6.5 9.6 5.5 3.8 4.1 3.3 Ratios NHLOAC CEC	2.0 3.2 2.0 1.2 1.2 1.0 to Cl Ext. Iron 0.05 0.03 0.03	Tr. Tr. Tr. Tr. Tr. Tr. Tr.	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	llity.			3.0 2.8 3.2 3.4		92 91 96	105 100 100 100
6-10 10-18 18-29 29-40 52-52-62 Depth (In.) 0-6 6-10 10-18 18-29 29-40	6.5 9.6 5.5 3.8 4.1 3.3 Ratios NB4,0Ac CEC 0.64 0.67 0.58 0.73	2.0 3.2 2.0 1.2 1.2 1.0 to CI Ext. Iron 0.05 0.03 0.03 0.03	Tr. Tr. Tr. Tr. Tr. Tr.	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	ility.			3.0 2.8 3.2 3.4		92 91 96	105 100 100 100
6-10 10-18 18-29 29-40-52 52-62 Depth (In.) 0-6 6-10 10-18 18-29 29-40-52	6.5 9.6 5.5 3.8 4.1 3.3 Ratios NHLOAC CEC	to C1 Ext. Iron 0.03 0.03 0.03 0.04	Tr. Tr. Tr. Tr. Tr. Tr. 2r. 2r. 2.45 0.40 0.41 0.36 0.36 0.44	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	ility.			3.0 2.8 3.2 3.4		92 91 96	105 100 100 100
6-10 10-18 18-29 29-40 52-62 52-62 Depth (In.)	6.5 9.6 5.5 3.8 4.1 3.3 Ratios NB4,0Ac CEC 0.64 0.67 0.58 0.73	2.0 3.2 2.0 1.2 1.2 1.0 to CI Ext. Iron 0.05 0.03 0.03 0.03	Tr. Tr. Tr. Tr. Tr. Tr. 2r. 2r. 2.45 0.40 0.41 0.36 0.36 0.44	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	ility.			3.0 2.8 3.2 3.4		92 91 96	100 100 100 100
6-10 10-18 18-29 29-140 40-52 52-62 Depth (In.) 0-6 6-10 10-18 18-29 29-140 140-52	6.5 9.6 5.5 3.8 4.1 3.3 Ratios NHLOAC CEC	to C1 Ext. Iron 0.03 0.03 0.03 0.04	Tr. Tr. Tr. Tr. Tr. Tr. 2r. 2r. 2.45 0.40 0.41 0.36 0.36 0.44	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	ility.			3.0 2.8 3.2 3.4		92 91 96	100 100 100
6-10 10-18 18-29 29-40-52 52-62 Depth (In.) 0-6 6-10 10-18 18-29 29-40-52	6.5 9.6 5.5 3.8 4.1 3.3 Ratios NHLOAC CEC	to C1 Ext. Iron 0.03 0.03 0.03 0.04	Tr. Tr. Tr. Tr. Tr. Tr. 2r. 2r. 2.45 0.40 0.41 0.36 0.36 0.44	0.5 0.5 0.2 0.2 0.2 0.1	13.3 7.7 5.2 5.5	2.3 0.7 0.5 0.2 0.5	8.4 5.7 5.7 4.9	13.3 7.7 5.2 5.4 4.5			tensib	ility.			3.0 2.8 3.2 3.4		92 91 96	100 100 100

Soil Type: Bresser sandy loam

Boil Nos.: 8610010-3-9 Classification: Brown.

Incation: 1,321 feet north, 44 feet west of the south quarter corner of Sec. 23, T4S, R61W, Arapahoe County, Colorado. Climate: Continental, average annual precipitation 14 inches. Mean annual temperature 49° F.

Growing season 150 days. Elevation 5,250 feet.

Vegetation: Native pasture. Hius grams, green needlegrass, threeswn, little buckwheat, some sixweeks fescue.

Parent Material: Acolian sands from the Dawson Arkose formation primarily.

Physiographic position: Upland.

Relief: Gently rolling. 8 percent north-facing slope. This pit is about 75 feet below the crest of an acclian ridge, and about 200 feet up from the base. The ridge crest is about 30 feet higher than the trough and extends from northwest to southeast.

Drainage: Surface runoff rapid, internal drainage medium to rapid. Intake rate moderately rapid under grass,

moderate where cultivated.

Moisture: Slightly moist throughout, usually dry. Stoniness: None. Water table: None. Erosion: None to slight wind.
Described by: J. B. Brown, June 29, 1961.

Horizon and Lincoln Lab No.

0 to 6 inches. Very tark grayish brown (10YR 3/2, moist) sandy loam; dark grayish brown (10YR 4/2, dry) very weak medium subangular blocks to weak medium granules; slightly hard when dry, loose when moist; 15550

many roots; clear smooth boundary.

6 to 10 inches. Bark brown (10YR 3.5/3, moist and crushed) sandy loam; dark brown (10YR 4/3, dry) weak medium prisms breaking to weak medium subangular blocks; hard when dry, very friable when moist; thin 15551 patchy clay films on some ped surfaces; many roots; clear wavy boundary.

10 to 18 inches. Dark brown (7.5YR 4/3, moist) sandy clay loam; brown (7.5YR 4.5/3, dry) moderate medium 15552 prisms breaking to moderate medium angular blocks; very hard when dry, friable when moist; thin nearly continuous clay skins on ped surfaces; some clay nodules or spots where there is a definite increase in clay, are present; many roots penetrating soil aggregates; clear wavy boundary.

18 to 29 inches. Brown 7.5YR 4.5/3, moist) sandy loam; brown (7.5YR 5.5/3, dry) weak coarse prismatic 15553 breaking to weak coarse subangular blocks; very hard when dry, very friable when moist; thin patchy clay films on ped surfaces; clay nodules 5 to 15 millimsters in diameter are present; roots and root channels are plentiful; tongues of B2 horizon reach to 24 inches; clear wavy boundary.

29 to 40 inches. Brown (10YR 5/3, moist) loamy sand; pale brown (10YR 6/3, dry) massive; hard when dry, loose when moist; few clay balls at 5 to 15 millimeters in diameter are present; some roots and root channels; streaks of B3 reach to 40 inches, but no clay skins observed; some roots and root CI. 15554 channels; clear smooth boundary.

40 to 52 inches. Brown (10YR 5/3, moist) sand; pale brown (10YR 6/3, dry) massive or single grain; slightly hard when dry, loose when moist; occasional clay ball 5 to 10 millimeters in diameter present; few roots and channels present; diffuse boundary. 15555

52 to 62 inches. Brown (10YR 5/3, moist) sand; pale brown (10YR 6/3, dry) massive to single grain; 15556 slightly hard when dry, loose when moist; very few clay balls.

Remarks: This soil is noncalcareous throughout. At this location lime was found in horizontal streaks at 48 to 68 inches in a distance of 3 feet; lime streaks were violently calcareous, but only slightly calcareous below the streaks; lime depth is highly variable in this series in Arapahoe County. Many of the sand grains throughout the profile are feldspar.

Bureau of Public Roads Samples:

0-6 inches 10-18 inches 29-40 inches SOIL Bresser sandy Loam

SOIL Nos. S61Colo-3-10 LOCATION Arapahoe County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska

_____LAB. Nos. <u>15557-15562</u>

February 1965

]	1Bla							s and parti			3A1.					
			Total					Sand		Si	t	ļ. ———			Coa	rse fragme	nts 2A
Depth (in.)	Horizon	Sand (2-0.05)	Silt (0.05– 0.002)	Clay (< 0.002)	Very coarse (2-1)	ļ	i .	Fine (0.25–0.1)	Very fine (0.1–0.05)	0.05-0.02	int, III (0.02- 0.002)	Int. II (0.2–0.02)	(2-0.1)		>= 2 Pct.	Po	19 - 76 t. of
0-5	Àl	74.8	17.9	7.3	8.0	28.9	16.9	16.0	5.0	12.0	5.9	22.7	69.8		PCI.		/ BMM
5-9	B1	73.4	12.7	13.9		25.3	17.7	19.8	5.0	8.1	4.6	20.4	68.4		1 -	1	
9-1 6	B2t	69.3	12.0	18.7	9.2	31.2	14.0	11.5	3.¥	7.7	4.3	14.9	65.9		-		l
16-28	B3	83.9	6.1	10.0	10.8	36.6	18.3	15.7	2.5	3.6	2.5	8.6	81.4		-	İ	
28-40	Ci	86.8	5.0	8.2	12.5	31.3	18.0	20.6	4.4	3.0	2.0	15.4	82.4		Tr.	1	
40-50	CS CS	86.8	5.4	7.8	9.6	31.2	19.2	21.5	5.3	2.6	2.8	16.5	81.5	-	Tr.	ļ	
							<u> </u>		-						! 		
	6Ala	6BLa	<u> </u>		6ELc	<u> </u> 		Bulk densit	_	4101		Vater conte				рн 8	Cla
Depth (In.)	Organic carbon	Nitrogen	C/N		Carbonate as CaCO ₃	Ext. Iron	4Alg 1/10- Bar	4A1c 30-Cm	Air-	₫. COLE	4383 30-ст.	1/	4B2 15-Bar			1:10	(1:1)
	Pct.	Pct.			Pct.	es Fe	g/oc	g/cc	g/cc		Pct.	Pct.	Pct.				
0-5	0.86	0.073	12				1.60	1	1.63	0.04	7.4a		3.4			6.2	6.2
5-9	0.75	0.077	10		ŀ		1		1.62		۱	9.6	5.4			6.6	6.3
9-16 16-28	0.66	0.060				├		1.58			16.2	14.3	7.9 4.1			6.8	6.6
28-40	0.05	0.020			-	ļ		[1.750			7.4	3.1			6.9	6.8
40-50	0.02]					ĺ			:		5.0	2.2		1	7.0	
		Extractal		5Bla	<u>L </u>	6HLa		Exch.				L		803		Base sat	
Depth (in.)	6192b Ca	602b	6P2a,	6Q2a K	Sum	Ext. Acidit		5Ala Mi _h OAc						Ca/Mg		503 Sum Catalons	5C1 NE ₄ OA
	<u> </u>	·			meq/100 g	!	<u> </u>		L							Pct.	Pct.
0-5	3.8	1.0	Tr.	0.5	5.3	2.3	7.6	6.4				_		3.8		70	83
5-9	5.9	1.6	Tr.	0.4	7.9	2.3	10.2	8.8	[Ì				3.7		77 86	90
9-16	9.3	2.8	Tr.	0.5	12.6	2.1	14.7 8.7	13.8	ļ	ļ	├	┞——		3.3	├	84	91
16-28	7.3	1.7	Tr.	0.3	7.3	1.4	1 0.7	7.5	İ	<u> </u>	l	l		3.1	└	J_04	97

Soil Type: Bresser sandy loam Soil Nos.: 961Colo-3-10

Classification: Brown

Location: 612 feet west, 108 feet south of the northeast corner of Sec. 21, T58, R61W, Arapahoe County, Colorado. Climate: Continental, average annual precipitation 15 inches. Mean annual temperature 48° F.

Growing season 145 days, (estimated). Elevation 5,400 feet.

Vegetation: Rative pasture. Blue grams, needleandthread, western wheatgrass, threeaven, little buckwheat, wild alfalfa

Parent material: Acolian sands from the Dawson Arkose formation primarily.

Physiographic position: Upland.

cently rolling. 7 percent east-facing slope. This pit is about 30 feet below the crest of an acolian ridge and about 150 feet up from the base. The ridge crest is about 20 feet higher than the trough and Relief: Cently rolling. extends from north to south.

Drainage: Surface runoff rapid, internal drainage medium to rapid, intake rate moderately rapid under grass, moderate under cultivation.

Moisture: Slightly moist throughout, usually dry.

Stoniness: None. Water table: None.

Brosion: Mone to slight wind. Probably more deposition than removal.

Described by: J. B. Brown, June 30, 1961.

Horizon and lincoln lab No.

O to 5 inches. Very dark grayish brown (10YR 3/2, moist) light sandy loam; dark grayish brown (10YR 15557 4.5/2, dry) very weak medium blocks breaking to weak fine granules; slightly hard when dry, loose when moist; many roots; field pH 6.6; clear smooth boundary.

5 to 9 inches. Dark brown (10YR 3/3, moist) sandy loam; dark brown (10YR 4/3, dry) weak medium prisms breaking to weak medium subangular blocks; hard when dry, very friable when moist; thin very patchy 15558 clay films on some peds; field pH 6.8; clear wavy boundary.

9 to 16 inches. Dark brown (7.5YR 3.5/3. moist) sandy clay loam: brown (7.5YR 4/3. dry) brown (7.5YR

SOIL	SURVEY	LABOR	ATOR'	Y Lincoln	, Nebr.	February	1959	#**** **
SOIL	TYPE B	uena Vista ery stony	sandy lo	-OCATION	Chaffee	County,	Colorado	*****

SOIL NOS.

8580010-8-7 LAB. NOS. 9075-9077

1Bla PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent) 2A2 HORIZON COARSE COARSE MEDIUM SAND SAND SAND VERY FINE SAND TEXTURAL CLASS DEPTH FINE SILT CLAY > 2 0.5-0.25 0.25-0.10 0.10-0.05 0.05-0.002 0.2-0.02 0.02-0.002(9mm 2-1 1-0.5 < 0.002 8.1 13.8 13.3 8.1 12.1 0-2 13.1 31.8 13.0 35.6 15.0 AL. Tr. sl 10.8 32.2 30.8 16.9 2-5 AΒ 10.2 7.2 10.0 16.3 16 1 5-30 B2t 6.7 11.4 7.5 13.4 14.0 25.0 22.0 35.0 11.2 17 scl 6Ela ORGANIC MATTER MOISTURE TENSIONS pН Free 4B2 8Cla 6Ala 6Bla Iron ÇoCO3 ORGANIC NITRO-CARBON GEN 1/10 1/10 1/3 ATMOS. ATMOS. IS ATMOS. %Fe₂03 equiv-C/N 1:5 1:10 6.1 <u>6ගුළ</u> 0.156 12 8.2 1.90 1.6 1.81 6.6 0.172 10 1.6 \triangleleft 9.1 0.094 11 < 10.9 7.6 1.07 1.6 EXTRACTABLE CATIONS 5Bla 5Ala BASE 5C3 Ca/Mg Sum Sum SAT. CATION XCHANGE APACITY NH₄AC 6N2b | 602b | 6Hla | 6P2a 602a Bases Base Cattions NH4Ac Sat. % 5Bla 5**A3**a ĸ EXCH. on Sum milliequivolents per 100g. soi -me/100g→ 813 5Q1 Cations 1.7 4.8 <0.1 0.9 82 68 10.2 15.0 4.5 12.5 7.6 82 14.6 17.8 4.5 15.2 3.2 0.9 96 11.2 2.5 <0.1 1.4 21.3 22.9 4.2 18.5 3.8 1.6 0.1 115 93 16.0

Soil Type: Buena Vista very stony sandy loam. Described Location: SEt of Sec. 2, T15S, R77%, Chaffee County, Colorado. Described by: A. J. Cline Date of Sampling: September 1957 Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline Physiographic Position: Upland side slope at an elevation of approximately 9,775 feet. Topography: Moderately sloping convex area facing southwest. Drainage: Well Drained. Vegetation: Ring muhly, fescue, and sage. Use: National Forest Service land. Soil Nos : 858Colo-8-7

 SOIL TYPE Buera Vista LOCATION Chaffee County, Colorado very stony sandy loam

SOIL NOS.

8580010-8-10 LAE. NOS. 9086-9090

, 3444, (410 + 1414, 1414, 1414, 1414		1 B i	A	PARTI	CLE SIZ	E DISTRIB	UTION (in	mm.) (pe				1020-1410041040404444
DEPTH INCHES	HORIZON	VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY	r. 2-0.02	0.02-0.002	2A2 > 2 (<19mm	TEYTURAL CLASS
0-3 3-10 10-16 16-20 20-35+	Al AB B2 B3ca Cca	22.6 20.5 20.0 18.1 8.5	18.5 15.4 16.7 17.9 16.3	9.0 8.0 7.5 7.2 10.1	11.7 10.6 9.5 11.0 15.8	8.7 9.3	20.0 22.2 21.5	9.0 14.6 15.5	26.9 26.7 25.7	8.7 10.2 10.6	7 19 27 2≌	cosl cosl cosl cosl sl
1 1 1	H□		OPG/	NIC MA	TTER	Free	**************************************	6Ela	! *** :: *** *** *** *** *** *** *** ***	MOIS	TURE TE	NSIONS
8 Cla	t:5	1:30	6Ala ORGANIC CARBON %	NITRO-	C/N	Iron ^{%Fe} 2 ⁰ 3 6Cla		CoCO3 aguive alent		1/10 ATMOS. %	1/3 ATMOS. %	4B2 15 atmos. %
6.1			1.83	n. 124	15	1.1	_			<u> </u>		6.6

Soil Type: Buena Vistavery stony sandy loam. Described by: A. J. Cline Location: NW4 of Sec. 26, This, R77W, Chaffee County, Colorado.

Date of Sampling: September 1957

Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline

Physiographic Position: Upland ridge at an elevation of approximately 9,300 feet.

Topography: A moderate convex slope of approximately 7 percent facing east.

Drainage: Well drained.

Vegetation: Ring Muhly, blue grama, sage, and scattered weeds.

Use: National Forest Service land.

Soil Nos.: 858Colo-8-10

Lincoln Horizon

9086 A₁ 0-3 inches

Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) stony sandy loam; soft when dry, very friable when moist; strong very fine granular structure; noncalcareous; approximately 20 percent of this horizon is small stone and gravel; lower boundary clear and smooth.

9087 AB 3-10 inches

Brown (10YR 5/3 dry) to dark brown (10YR 3/3 moist) stony sandy loam; slightly hard when dry, very friable when moist; weak to moderate medium subangular blocky structure breaking to moderate medium granules; noncalcareous; approximately 50 percent of this horizon is stone; lower boundary clear and smooth.

9088 B_{2t} 10-16 inches

Brown or pale brown (10YR 5.5/3 dry) to dark brown (10YR 3.5/3 moist) stony sandy clay loam; slightly hard when dry, very friable when moist; moderate fine subangular blocky structure; noncalcareous; there are thin patchy clay skins on both the horizontal and vertical faces of most of the soil aggregates, and there is a thin nearly continuous coating of clay on the rock fragments; approximately 50 percent of this horizon is stone; lower boundary gradual and smooth.

9089 B_{3ca} 16-20 inches

Pale brown (10YR 6/3 dry) to brown or dark brown (10YR 4/3 moist) stony sandy loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure; violently efferwescent; this is a weak horizon of lime accumulation with some visible lime occurring as concretions; approximately 50 percent of this horizon is rock and there is some lime coating on their surfaces; lower boundary gradual and smooth.

9090 C_{ca} 20-35 / inches

Light gray (2.57 7/1 dry) to gray or grayish brown (2.57 5/1.5 moist) stony sandy loam: slightly hard when dry, very friable when moist; massive; violently effervescent; this is a prominent horizon of lime accumulation with visible lime occurring in finely divided forms and as small concretions; approximately 70 percent of this horizon is stone and the surfaces of most of the stones are coated with lime. This horizon grades downward into only slightly fractured trachyte rocks.

SOIL Nos. S61Colo-3-5 LOCATION Arapahoe County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska

____ LAB. Nos. <u>15517-15524</u>

February 1965

i		1.Bla						Size clas	s and parti	cle diamete	er (mm)	3A1						
			Total					Sand		Şi	lt ,			3Ala	Clay	Coa	rse fragme	nts 2A2
Depth (In.)	Horizon	Sand (2-0.05)	Silt (0.05– 0.002)	Clay (< 0.002)	Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25–0.1)	Very fine (0.1-0.05)	0.05-0.02	Int, III (0.02- 0.002)	Int. II (0.2–0.02)	(2-0.1)		Noncar- bonate	> 2	2 - 19	19-76
	<u>l</u>	_	0.002)	'	1		! t. of << 2 :	nm	<u> </u>		- 0.002)	<u> </u>	_			Pct.		t. of 6mm
0-3	Al.	31.3	53.0	15.7	1.8	1.1	1.2	6.7	20.5	38.2	14.8	63.0	10.8		16	Tr.		
3-6	B1	30.9	43.1	26.0	2.1	1.1	1.2	7.3	19.2	31.2	11.9	55.1	11.7		26	Tr.		
6-11	B2t_	31.9	37.7	30.4	2.7	1.5	1.5		17.8	27.1	10.6	50.3	14.1	-	30	Tr.		
	IB2lca	25.6	31.2	43.2	1.68	1.2a	1.5a		12.4a	15.2	16.0	33.3	13.2	20	23	Tr.		
19-24	IB22ca	23.5	34.1	42.4	1.2a		1.1a		12.3a	15.3	18.8	33.1	11.2	18	24	Tr.		
	IIIB21ca IIIB22ca	25.4	36.6	38.0	0.8a 2.1a	0.8a 1.2a	1.1a 1.5a		14.2a 16.0a	18.0	18.6	37.9 44.3	11.2	14	24 25	Tr.	l i	
	IIIB23ca	31.5 35.0	36.0 35.0	30.0	1.8a						13.7	46.8	15.5 17.7	7 3	27	Tr. Tr.		
	IIB21ca	36.0	32.4	31.6	2.6	1.4	1.9	12.6	17.5	20.3	12.1	45.8	18.5					
19-246	IIB22ca	33.8 36.4	34.1 34.2	32:1 29:4	1.2	1.1	1:7	17.8	18.0 19.4	20.9 20.9	13.2 13.3	46.5 48.6	15.8					
31-4961	IIIB22ca 6Ala		34.2	29.4	6Elc	1.1 6Cla		12.7					17.ŏ	<u> </u>			<u> </u>	
ŀ	OALL	6Bla			OFF	OCIA		Bulk densit		4DL		ater conte			1 1		pH 8	Cla
Depth	Organic	Nitrogen	C/N		Carbonate	Ext.		4ALC	4Alb Air-	COLE	4B3		4B2				ł	
(In.)	carbon				as CaCO ₃	Iron		30-Cm.	Dry	£	30-Cm.		15-Baz				1:10	(1:1)
				1		as Fe		JUU	3	- 1	JU-0111+							
j	Pct.	Pct.		1	Pct,	Pet.	g/cc	g/cc	g/cc	Ì	Pct.	Pct.	Pct.) i]]	
0-3	1.41	0.103	14	i	-	0.8			1.44				6.8		\vdash		7.2	6.9
3-6	1.08	0.109	10		-	0.9							10.2				7.1	6.8
6-11	0.98	0.097	10		Tr.	1.1		1.32c	1.49	0.21	21.4c		12.4				7.5	7.3
11-19	0.74	0.079	9			0.8							12,1	•			8.4 8.5	7:9 8:8
19-24	0.42	0.045	9	l	30 29	0.6			1.64				12.0		. 1		8.5	
24-31	0.22				23	0.7			1.74	o 00			11.4				8.6	8.1
31-49 49-64	0.08				11 7	0.8 0.8		1.47	1.69	0.81	26.3		11.0 11.3				8.6	8.1
19-0-	0.07				'			-					,,					
		Eutrotob	le bases 5	D1 a		6Hla	Cat	Exch.							803		Base satu	vation
+	6N2b	602b	6P2a	602a		Ortection	Ce		i						003	i	5C3	5C1
Depth	011.0	ÇOLD	Q , — Q			Ext.	5A3a	5Ala							Ca/Mg		Sum	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
(In.)	Ca	Mg	Na	к	Sum	Acidity									'		Cations	NH, OA
				[Dations	NH _l OAc							\ \			
Į.			,															
	-				meq/100 g												Pct.	Pct.
0-3	9.2	2.4	Tr.		meg/100 g 12.4	2.8	15.2	12.0		-					3.8		82	103
3-6	9.2 14.5	2.4 3.7	Tr.	0.8	12.4 19.0	2.8	15.2 23.3	18.6		<u> </u>					3.8 3.9			
3-6 6-11			Tr. 0.1	0.8				18.6 22.9									82	103
3-6 6-11 11-19			Tr. 0.1 0.1	0.8 1.0 0.6				18.6 22.9 17.6									82	103
3-6 6-11 11-19 19-24			Tr. 0.1 0.1 0.2	0.8 1.0 0.6 0.6				18.6 22.9 17.6 17.5									82	103
3-6 6-11 11-19 19-24 24-31			Tr. 0.1 0.2 0.3	0.8 1.0 0.6 0.6 0.5				18.6 22.9 17.6 17.5 18.3									82	103
3-6 6-11 11-19 19-24			Tr. 0.1 0.1 0.2	0.8 1.0 0.6 0.6				18.6 22.9 17.6 17.5									82	103
3-6 6-11 11-19 19-24 24-31 31-49			Tr. 0.1 0.1 0.2 0.3	0.8 1.0 0.6 0.6 0.5				18.6 22.9 17.6 17.5 18.3									82	103
3-6 6-11 11-19 19-24 24-31 31-49	14.5	3.7	Tr. 0.1 0.1 0.2 0.3 0.4 0.5	0.8 1.0 0.6 0.6 0.5 0.6 0.6		4.3	23.3	18.6 22.9 17.6 17.5 18.3 19.2 19.1				a) (G-		100	3.9		82	103
3-6 6-11 11-19 19-24 24-31 31-49 49-64	14.5	3.7	Tr. 0.1 0.1 0.2 0.3 0.4 0.5	0.8 1.0 0.6 0.6 0.5 0.6 0.6	19.0	4.3 a. b.	23.3 5-25% Analys	18.6 22.9 17.6 17.5 18.3 19.2 19.1		oonate	remov	al (Se	e meth	od 1B3	3.9		82	103
3-6 6-11 11-19 19-24 24-31 31-49 49-64	Pas Tall	3.7	0.1 0.1 0.2 0.3 0.4 0.5	0.8 1.0 0.6 0.6 0.5 0.6 0.6	19.0	4.3 a. b.	23.3 5-25% Analys One cl	18.6 22.9 17.6 17.5 18.3 19.2 19.1	er cari	ponate	Lemon	al (Se	e meth	od 1B3	3.9		82	103
3-6 6-11 11-19 19-24 24-31 31-49 49-64	14.5	3.7	0.1 0.1 0.2 0.3 0.4 0.5	0.8 1.0 0.6 0.6 0.5 0.6 0.6	19.0	4.3 a. b. c. d.	5-25% Analys	18.6 22.9 17.6 17.5 18.3 19.2 19.1	er cari	conste	LemoA	al (Se	e meth	od 1B3	3.9		82	103
3-6 6-11 11-19 19-24 24-31 31-49 49-64	Pas Tall	3.7	O.1 0.1 0.2 0.3 0.4 0.5	0.8 1.0 0.6 0.6 0.5 0.6 0.6	19.0	4.3 a. b. c. d.	5-25% Sone ol. Noncar	18.6 22.9 17.6 17.5 18.3 19.2 19.1	er carl			•	e meth	od 133	3.9		82	103
3-6 6-11 11-19 19-24 24-31 31-49 49-64	Pas Tall	3.7	0.1 0.1 0.2 0.3 0.4 0.5	0.8 1.0 0.6 0.5 0.6 0.6 0.6	19.0	a. b. c. d. e. f.	5-25% Analys One cl. Noncar Total Coeffi	18.6 22.9 17.6 17.5 18.3 19.2 19.1 carbonate od. bonate	er cari clay. of lim	er ex	tensib	ility.		•	3.9		82	103
3-6 6-11 11-19 19-24 24-31 31-49 49-64 Depth (In.)	14.5 Pau RH ₄ OAc CEC 0.76 0.72	tios to the control of the control o	O.1 0.1 0.2 0.3 0.4 0.5 0.5 Clay	0.8 1.0 0.6 0.5 0.6 0.6 0.6 8D1 e 15-Bax Water	19.0	a. b. c. d. e. f.	5-25% Analys One ol. Noncar Total Coeffi	18.6 22.9 17.6 17.5 18.3 19.1 19.1 carbonnis aft od. bonate clay.	clay. of line	er ex 4 <u>町</u>).	tensib B2 h	ility.	ery fe	w cla	3.9)).	DO 10	95 85	103
3-6 6-11 11-19 19-24 24-31 31-49 49-64 Depth (In.)	14.5 Page 1	3.7 tios t NH, OAC CEC	0.1 0.1 0.2 0.3 0.4 0.5 0.5 0.1 0.05 0.04 0.04	0.8 1.0 0.6 0.6 0.5 0.6 0.6 0.6 0.6	19.0	a. b. c. d. e. f.	5-25% Analys One ol. Noncar Total Coeffi	18.6 22.9 17.6 17.5 18.3 19.1 19.1 carbonnis aft od. bonate clay.	clay. of line	er ex 4 <u>町</u>).	tensib B2 h	ility.	ery fe	w cla	3.9)).	DO 10	95 85	103
3-6 6-11 11-19 19-24 24-31 31-49 49-64 Depth (In.)	14.5 Pau d NH, OAc CPC 0.76 0.772 0.775 0.76	3.7 2.10s to e 0.76 0.76 0.75 0.75	O.05 O.05 O.05 O.05 O.05 O.05 O.05 O.05	0.8 1.0 0.6 0.5 0.6 0.6 0.6 0.6 0.6 0.43 0.43 0.43 0.41 0.28	19.0	a. b. c. d. e. f.	5-25% Analys One ol. Noncar Total Coeffi	18.6 22.9 17.6 17.5 18.3 19.1 19.1 carbonnis aft od. bonate clay.	clay. of line	er ex 4 <u>町</u>).	tensib B2 h	ility.	ery fe	w cla	3.9)).	DO 10	95 85	103
3-6 6-11 11-19 19-24 24-31 31-49 49-64 Depth (In.)	Pay MH,0Ac CPC 0.76 0.75 0.76 0.73	3.7 tios t 0.76 0.72 0.72 0.41	O.05 O.04 O.05 O.05 O.05 O.04 O.05 O.04 O.04 O.02 O.01	0.8 1.0 0.6 0.6 0.5 0.6 0.6 0.6 0.6 0.43 Water Water 0.43 0.39 0.41 0.28	19.0	a. b. c. d. e. f.	5-25% Analys One ol. Noncar Total Coeffi	18.6 22.9 17.6 17.5 18.3 19.1 19.1 carbonnis aft od. bonate clay.	clay. of line	er ex 4 <u>町</u>).	tensib B2 h	ility.	ery fe	w cla	3.9)).	DO 10	95 85	103
3-6 6-11: 11-19 19-24 24-31: 31-49 49-64 0-3 3-6 6-11: 11-19 19-24 24-31	Page 14.5 Page 25.76 0.76 0.77 0.77 0.77 0.77 0.776	3.7 2.10s t 0.76 0.72 0.75 0.41 0.48	0.1 0.2 0.3 0.4 0.5 0.5 0.1 0.05 0.04 0.05 0.04 0.04 0.04 0.02	0.8 1.0 0.6 0.6 0.5 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	19.0	a. b. c. d. e. f.	5-25% Analys One ol. Noncar Total Coeffi	18.6 22.9 17.6 17.5 18.3 19.1 19.1 carbonnis aft od. bonate clay.	clay. of line	er ex 4 <u>町</u>).	tensib B2 h	ility.	ery fe	w cla	3.9)).	DO 10	95 85	103
3-6 6-11: 11-19 19-24 24-31: 31-49 49-64 0-3 3-6 6-11: 11-19 19-24: 24-31: 31-49	14.5 Fax d NH4OAc CFC 0.76 0.72 0.75 0.76 0.77	3.7 tios t e NH ₁ OAc 0.72 0.75 0.41 0.48 0.59	0.1 0.1 0.2 0.3 0.4 0.5 0.5 0.04 0.05 0.04 0.04 0.02 0.02	0.8 1.0 0.6 0.5 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	19.0	a. b. c. d. e. f.	5-25% Analys One ol. Noncar Total Coeffi	18.6 22.9 17.6 17.5 18.3 19.1 19.1 carbonnis aft od. bonate clay.	clay. of line	er ex 4 <u>町</u>).	tensib B2 h	ility.	ery fe	w cla	3.9)).	DO 10	95 85	103
3-6 6-11: 11-19 19-24 24-31 31-49 49-64 (In.) 0-3 3-6 6-11 11-19 19-24 24-31	Page 14.5 Page 25.76 0.76 0.77 0.77 0.77 0.77 0.776	3.7 tios t e NH ₁ OAc 0.72 0.75 0.41 0.48 0.59	0.1 0.2 0.3 0.4 0.5 0.5 0.1 0.05 0.04 0.05 0.04 0.04 0.04 0.02	0.8 1.0 0.6 0.5 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	19.0	a. b. c. d. e. f.	5-25% Analys One ol. Noncar Total Coeffi	18.6 22.9 17.6 17.5 18.3 19.1 19.1 carbonnis aft od. bonate clay.	clay. of line	er ex 4 <u>町</u>).	tensib B2 h	ility.	ery fe	w cla	3.9 3.9	DO 10	95 85	103

Soil Type: *Buick loam Soil Nos.: S61Colo-3-5 Classification: Brown.

location: 2,100 feet east, 970 feet north of the southwest corner of Sec. 22, T5S, R59W, Arapahoe County, Colorado.

Climate: Continental average annual precipitation 14 inches. Mean annual temperature 49° F.
Growing season 150 days. Rievation 5,400 feet.

Vegetation: Native pasture. Elue grama, buffalograss, pricklypear, some vestern wheatgrass, sixweeks fescue, and wild alfalfa.

Parent material: Outwash, probably quarternary age. Solum probably mixed local acolian material and outwash. Physiographic position: Upland.

Relief: Sloping. 8 percent facing south. Slope about 500 feet long, grades toward small drainage way and out by small subdrainage. Pit about 250 feet from crest of slope.

Drainage: Surface drainage rapid, internal drainage medium in buried soils but slower than in the loss soils.

Moderate intake rate.

Water table: None Moisture: Moist to 14 inches. Usually dry.

Stoniness: Few fine water-worn gravel of quartz and feldspar on the surface and throughout the profile. Some increase with depth. Estimated 5 percent by volume.

Salt or alkali: None observed other than calcium carbonate. Erosion: Slight water and wind erosion.

Described by: J. B. Brown, June 28, 1961.

Horizon and Lincoln Lab. No.

O to 3 inches. Very dark grayish brown (10YR 3.5/2, moist) losm; grayish brown (10YR 5/2, dry) weak medium subangular blocks breaking to weak fine granules; soft when dry, very friable when moist; few fine 15517 water-worm gravels; clear smooth boundary.

3 to 6 inches. Very dark grayish brown (10YR 3.5/2, moist and crushed) loam; dark grayish brown (10YR Bl. 15518 4/2, dry) moderate medium prisms breaking to weak medium angular blocks; slightly hard when dry, very friable when moist; few thin patchy clay films on some vertical faces; few water-worn gravels; clear smooth boundary.

6 to 11 inches. Dark brown (10YR 4/3, moist) clay loam; brown (10YR 4.5/3, dry) dark grayish brown (10YR 4/2, moist and crushed) moderate medium prisms breaking to moderate to strong fine angular blocks; B2t 15519 slightly hard when dry, friable when moist; thin nearly continuous clay films on all ped surfaces; many roots and root channels penetrating peds; few water-worm pebbles, with definite stone line of fine gravel at the base; abrupt slightly wavy boundary.

ll to 19 inches. Very pale brown (10YR 7/3, moist) heavy loam; very pale brown (10YR 7.5/3, dry) weak medium prismatic breaking to moderate fine subangular blocks; hard when dry, friable when moist; thin patchy clay skins on ped surfaces; roots are plentiful; few small water-worn pebbles; violent effervescence; II B2lca 15520 clear smooth boundary.

19 to 24 inches. Pale brown (10YR 6/3, moist) light clay loam; very pale brown (10YR 7/3, dry) weak medium prisms breaking to moderate fine subangular blocks; hard when dry, friable when moist; thin patchy clay films on all ped surfaces; roots and channels plentiful; few small water-worn pebbles present; II R22ca 15521 violent effervescence; clear smooth boundary.

III B2lca 24 to 31 inches. Light yellowish brown (10YR 6/4, moist) clay loam; very pale brown (10YR 7/3, dry) mod-15522 erate coarse prismatic breaking to moderate medium subangular blocks; hard when dry, firm when moist; thin patchy clay films on ped surfaces, with dark streaks on outside of peds; some roots; more fine gravel in this horizon than the ones above; violent effervescence; gradual amooth boundary.

31 to 49 inches. Yellowish brown (10YR 5/4, moist) clay loam; light yellowish brown (10YR 6/4, dry) moderate coarse prismatic; very hard when dry, firm when moist; thin nearly continuous clay films; dark III B22ca 15523 stains on peds continue; lime concretions are common medium and distinct; few pebbles and more coarse sand; strongly calcareous between lime concretions; lime concretions violently effervescent; gradual smooth boundary.

49 to 64 inches. Yellowish brown (10YR 5/4, moist) heavy losm; light yellowish brown (10YR 6/4, dry) weak to moderate coarse prismatic; hard when dry, friable when moist; thin patchy clay skins on vertical faces; III B23ca 15524 many small holes less than one millimeter in diameter; lime concretions are few medium and distinct; strong to violent effervescence.

Remarks: This soil is found on the side slopes beneath the Asolian Loess caps, and above residual soils on shale at the foot of slopes. The buried soils are quite distinctive; although it is hard to distinguish a difference between them and the modern soil. Dark staining of ped surfaces and clay films are the distinguishing characteristics. The stone line, as found in this profile, is not normally seen. This is the type location of the Buick series.

Bureau of Public Roads Samples: Al, 0-3 inches; E2, 6-11 inches; III E22ca, 31-49 inches.

		}		Fercent,	of Total 8	and		
LSL No.	Horizon	Total Sand	Very Coarse Sand	Coarse Sand	Medium Send	Fine Sand	Very Fine Sand	Ratio Coarse Over Fine Silt
15517	Al	31.3	5.8	3.5	3.8	21.4	65.5	2.6
15518	<u> B1</u>	30.9	6.8	3.6	3.9	23.6	62.1	2.6
15519	B2t	31.9	8.5	4.7	4.7	26.3	55.8	2.6
15520	II B2lca	36.0*	7.2*	3.9*	5•3 *	35.Ö*	48.6*	1.7*
15521	II B22ca	33.8*	3.6*	3.2*	5.Õ*	34.9*	53.3*	1.6*
15522	III Relca		-	•		22	,,,,	
15523	III R22ca	36.4*	3.8*	3.0*	4.9*	34.9*	53.4*	1.6*
15524	III B23ca	-	•				,,,,,,	

Coservations of fabric with stereoscopic microscope: E2 may have a very few clay films. Peds appear denser and shinier than 3-8.

SOIL *Buick loam

SOIL Nos. S62Colo-3-6 LOCATION Arapahoe County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska

LAB. Nos. <u>16991-16998</u>

February 1965

		1Rlb						Size cla	ss and perti	cle diamete	er (mm)	SAJ.						
	,		Total					Sand		Şi		î =		3AlaC	lay	Coa	rse fragme	nts2A2
Depth (In.)	Horizon	Sand (2-0.05)		Clay (< 0.002)		Рс	t. of << 2	mm	Very fine (0.1–0.05)						Noncer- bone te	≥ 2 Pct.	2 - 19 Pe	Τ
0-4	A1	32.8	51.2	16.0	0.la	0.5a	0.7a	3.6	27.9	38.7	12.5	69.0	4.9	ľ	16	Tr.	ĺ	
4-7 7-15	B1. B2	34.0 27.8	40.8	25.2 28.7	0.1a 0.2a	0.3a 0.3a	0.7a	3.7	29.2 23.7	29.5 29.7	11.3 13.8	61.2 55.4	4.8		25	Tr.		1
15-25	B31ca	16.2	54.4	29.4	0.16	0.1ь	0.3c	1.3c	14,4c		21.5	48.2	4.1 1.8	2	29 26	Tr.		├
25-36	B32ca	14.8	56.8	28.4	-	0.15	0.3c	1.2c	13.20	34.4	22.4	48.4	1.6	3		Tr.		
25-36 36-43	IIB21ca		55.2	28.4		0.2e	0.6c	2.0c	13.6e	32.9	22.3	47.7	2.8	Ž	25 26	Tr.		
43-50	IIB22ca		47.9	29.7	0.2c	0.6c	1.6c	4.6c	15.4c	30.7	17.2	48.7	7.0	2	28	Tr.		
50-60+	IIB23ca	26.6	41.1	32.3	0.6e	1.2c	2.8c	7-3c	14.7c	26.6	14.5	45.0	11.9	1	31	Tr.		ļ
	- ## **																	
7-1.5d	B2	27.5	44.0	28.5	-	0.2	0.6	2.7	24.0	33.+3	12.7	56.1	3.5					
15-25d	B31.ca	18.8	51.0	30.2	-	0.1	0.2	1.0	17.5	31.3	19.7	49.5 48.3	1.3 1.3	l				l
25-36d 36-43d	B32ca IIB21ca	18.0	52.5 51.5	30.9 30.5	-	0.1	0.2	1.0	15.3 15.4	32.3 31.2	20.2	47.8	2.6	├				
43-50a	IIB22ca		45.7	29.8	0.2	0.7	0.5	5.0	17.0	31.1	20.3 14.6	50.9	7.5	1				
50 <u>-60+a</u>	IIB23ca	28.7	41.3	30.0	ó.7	1.2	2.9	7.6	16.3	26.7	14.6	46.9	12.4					
					6ждь			Bulk densit	,		W	ater conte	nt		<u> </u>		pН	****
Depth	Organic	Nitrogen	C/N		Carbonate									ĺ	l			
(in.)	carbon				as CaCO ₃			'										(1:1)
0-4	Pct.	Pct.		-	Pct.		g/cc	g/cc	2/ 00	_	Pct.	Pct.	Pet.		\vdash			_
4-7 7-15					-			. '										
15-25 25-36					9 9 6													
36-43 43-50 50-60+					3													_
												-						
		Extracteb	le bases														Base sati	ration
Depth (in.)	Ca	Mg	Na	ĸ														
	- -				meq/100 g		_	-									Pct.	Pct.
				_								_						
					-													
	FOOL		L		<u></u> 1						└──┴	L						

a. 25-50% organic matter.
b. > 50% mica-like. 5-25% carbonate.
c. < 5% mica-like, 5-25% carbonate.

Soil Type: "Buick loss Soil Nos. 862Colo-3-6 Classification: Brown.

Location: 2,300 feet south, 200 feet east of the northwest corner of Sec. 2, T48, R60W, Arapahoe County, Colorado.

Climate: Continental, average annual precipitation 14 inches. Mean annual temperature 49°F.
Growing season 150 days. Elevation 5,200 feet.

Vegetation: Native pasture. Hive grams, buffalograss, pricklypear, some Western wheatgrass, sixweeks fescue, and wild alfalfa.

Farent material: Outwash, quarternary age. Modern solum probably mixed local acolian material and outwash. Hysiographic position: Upland

Helief: Sloping 7 percent facing south. Slope about 400 feet long, grades toward small drainage way, and cut by smaller subdrainages. Pit about 100 feet from creat of Slope.

Prainage: Surface drainage mapid, internal drainage medium in buried soil, but slower than in the modern soil.

Moderate intake rate.

Water table: None. Monature: Bry. Water table: None. Stonings: Few fine water-worn gravel of quartz and feldspar on the surface and throughout the profile.

Salt or alkali: None observed other than calcium carbonate. Brosion: Slight water and wind.

Described by: J. B. Brown, May 15, 1962.

Borizon and #Incoln Lab. No.

0 to 4 inches. Dark grayish brown (10YR 4/2, moist) loam; light brownish gray (10YR 6/2, dry) weak medium gubangular blocks breaking to weak very fine granules; soft when dry, very friable when moist; few fine 16001

water-worn gravels; clear smooth boundary.

4 to 7 inches. Dark grayish brown (10YR 4/2, moist) loam; brown (10YR 5/3, dry) moderate medium prisms breaking to moderate medium subangular blocks; slightly hard when dry, very friable when moist; thin 16992

water-worn gravel; many roots; clear smooth boundary.

7 to 15 inches. Dark brown (10YR 4/3, moist and crushed) clay loam; brown (10YR 5/3, dry) moderate TO: medium prisms breaking to strong fine angular and subangular blocks; hard when dry, friable when moist; thin patchy clay films on ped surfaces; bleached sand grains common in the upper part; dark staining on 16993 ped surfaces.

15 to 25 inches. Brown (10YR 5/3, moist) light silty clay loam; pale brown (10YR 6/3, dry) moderate medium prisms breaking to strong fine subengular blocks; very hard when dry, frieble when moist; violent B31ca 16994 effervescence; thin patchy clay films on peds; clear smooth boundary.

2) to 30 inches. Brown (10YR 5/3, moist) light silty clay loam; pale brown (10YR 6/3, dry) moderate medium prisms breaking to moderate fine subangular blocks; very hard when dry, friable when moist; violent effervescence; common medium distinct lime concretions; thin patchy clay films on vertical faces; gradual B32ca 16995 smooth boundary.

36 to 43 inches. Yellowish brown (10YR 5/4, moist) silty clay loam; light yellowish brown (10YR 6/4, dry) II B21ca moderate medium prisms breaking to moderate medium and fine subangular blocks; slightly hard when dry, friable when moist; strong effervescence; few thin patchy clay films present; many very fine pores; clear 16996 smooth boundary.

43 to 50 inches. Brown (7.5YR 5/5, moist) clay loam; light brown (7.5YR 6/5, dry) moderate II B22ca 16997 coarse prisms; slightly hard when dry, friable when moist; violent efferweence; common medium distinct lime concretions; thin patchy clay films; many fine pores; clear smooth boundary.

50 to 60 inches plus. Brown (7.5YR 5/5, moist) clay loam; light brown (7.5YR 6/5 dry) moderate medium to II B23ca 16998 coarse prisms breaking to weak medium subangular blocks; slightly hard when dry, friable when moist; violent efference; very few thin patchy clay films on vertical faces; many fine pores.

SOR Buick loam

SOIL Nos. S61Colo-3-8 LOCATION Arabahoe County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska

__ LAB. Nos. <u>15541-15549</u>

February 1965

		1B14	<u> </u>		,			Size clas	s and parti	cle diamet	er (mm) 3	A1.						
	'		Total					Sand		Si		 		BALL C	lay	Coa	rse fragme	nts 2/
Depth (in.)	Horizon	Sand (2-0.05)	Silt (0.05– 0.002)	Ciay (< 0.002)	Very coerse (2-1)		Medium (0.5-0.25)	t I	Very fine (0.1-0.05)	0.05-0.02	int. III (0.02– 0.002)	Int. 🎞 (0.2–0.02)	(2-0.1)	Carbon	\	> 2	2 - 19 Po	19- ;
	A 5	-	1 2	100			t. of < < 2 i		<u> </u>		Tag 1	1 CO C	-	 	<u> </u>	Pct.	_<:	76mm
0-3 3-6	Al Bl	42.1 40.4	47.1	10.8	0.8	1.6	3.3 3.5 2.5	9.3 10.1	27.1	36.7 28.6	8.8	68.6	15.0	1	111	Tr.	ì	ì
5-0 6-10	R2t	32.8	37.4 40.9	22.2 26.3	0.5	i.1	2.5	7.0	24.3 21.7	30.9	10.0	58.1 56.3	ii i	۱ -	56 55	Tr.	1	ļ
10-12	B2ca	32.2	42.7	25.1	0.68	1.1a	2.4a	6.8a	21.3a		11.0	56.6	10.9	Tr.	25	Tr.	1	
12-24	IIB2lca	32.3	41.9	25.8	0.8a	1.3a		6.9a	20.9≊		12.9	53.5	11.4	4	22	Tr.		ł
24-32	IIB22ca	32,4	41.4	26.2	1.4a	1.0a	2.3a	6.8a	20.9a		12.3	53.8	11.5	14	22	Tr.	<u> </u>	<u> </u>
	HIB21ca	35.4	33.2	31.4	1.6a	1.5a				19.0	14.2	42.3	19.6	3	28	Tr.		
42-55 55-72	IIIB22ca IIIB23ca	24.8	41.3 31.8	33.9 30.9	1.0a 1.5a	0.7a J.6a					17.8	41.9	20.0	3	31	Tr.	j)
<u> </u>	<u> </u>	_37.3	31.0	30.9	11,74	300	2.00	14.la	±(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10.1	13.3	44.5	20.0		30	Tr.	 -	
10-12b	P2ca	33.0 35.9	41.6 37.8	25.4 26.3	0.6	1.0	2.4	7:3	21.9 23.5	31.0 27.0	10.6 10.8	56.5 54.5	11.1	<u> </u>				
	IIB21ca	35.9	37.8	26.3	0.7	1.2	2.8	17.7	23.5	27.0		54.5	12.4	}	<u> </u>		↓	-
	IIB22ca IIB22ca	35.0 27.3	38.0 36.3	27.0 36.4	0.8	1.0	2.2	7.7 8.7	23.3 15.2	26.5 19.1	11.5 17.2	53.9 39.3 44.5	11:7	1		1		1
	IIIE23ca	38.9	31.5	29.6		1.7	3.0	14.3	18.3	17.8	13.7	44.5	20.6	1	1)]
												-	i 					
	6Ala	6Bla			6ELc	6Cla		Bulk densit	y	4101	 	Vater conte	ent		<u> </u>		pH	80
Depth	Organic	Nitrogen	C/N	ı	Carbonate	00		4Alc	4A1b	COLE		4Blb	482	4C1	1	$\vdash \lnot$	T	ΤŤ
(ln.)	carbon		, ,,,	}	as CaCO ₃	Ext.	1	1	Air-	e	} _		1	1/3- to		1	1:10	(1
			1	ľ	1	Iron	ĺ	30-Cm	Dry	} ~	30-Cm.	[1/3-Bar	15-Bar	15-Baz	1	t	1:10	ļ '*
	Pct.	Pct.		1	Pct.	as Fe	g/cc	-/		1	Pct.		l not	in.per	1		1	
0-3	1.32	0.097	14			Pet. 0.6	g/u:	g/cc	g/cc 1.38		PCI.	Pct.	9 Pet.	horizor	├ ──		6.8	6.
3-6	0.92	0.096	10	Ì] <u> </u>	0.8				İ	l	19.0	9.2	1	1	1	6.8	6.
6-10	0.76	0.087	9_		Tr.	0.8		1.36	1.50	0.12	24.0		ní.o	0.5	ļ	ļ	7.8	17.
10-12	0.55	0.086	6		6	0.6							10.9				8.3	7.
12-24	0.41	0.053	8		10	0.6		į .	1.68	l	1		10.2	1	ļ	<u> </u>	8.5	8.
24-32 32-42	0.29	 	 	 -	9 7 6	0.7	 	 	1.90		ļ	18.8 22.0	10.4	 	 		8.6	8.
42-55	0.07		l	l l	6	0.7	į .	į	1.50	ļ	4	22.0	14.0	1	}	1	8.7	8.
5 <u>5-7</u> 2	0.03				3	o.3							12.2	ļ	 -		8.7	8.
		Extractab	le bases	533.a		била.	Cat.	Exch.		Re	tios t	o Clay	<u></u>		8D3	 	Base sat	uratio
	6N2b	602b	6 P2a	602a			Ca	p	·	802	8D).	8D1.	801	t	(00)		503	5C
Depth (In.)	Ca	Mg	Na	K	Sum	Ext. Acidity		5Ala		NH _L OAC CEC	NH _L OAc	Ext. Iron	15-Bar Water		Ca/Mg		Sum Detions	
		1			اا		Dations	lun [†] Oyc) '	<u>c</u>	<u>a</u>	<u>a</u>	<u>a</u>				ľ	"
0-3	6.7	1.7	Tr.	0.7	meq/100 g	2,6	11.7	9.9		0.92	0.92	0.06	0.49	├─	30		78	Pe
3-6	12.1	3.0	Tr.	0.8	15.9	2.8	18.7	16.4]	0.74	0.74	0.04	0.49		3.0		85	3
6-10		~·~	Tr.	0.9	ا ﴿ رَبِّ ا		'.	20.5		0.78	0.78	0.03	0.42	Į.	***	l	٦,	-
10-12			Tr.	0.7				18.5		0.74	0.74	0.02	0.43	— —			 	T
12-24			0.1	0.6				16.4		0.74	0.64	0.02	0.40	l			ļ	1
24-32		ļ	0.2	0.5			ļ	17.1		0.78	0.65	0.03	0.40	↓			_	
32-42			0.7	0.4			[20.0	[0.71	0.64	0.02	0.38	l	ļ			1
12-55 55-72			1.0	0.6] [23.1 20.6	l i	0.74	0.68	0.02	0.41	l	Ī		1	
7-1-			1.0	V.3	-	_		40.0		0.09	10.07	0.03	0.39		-	_	 	1
]		ŀ			1	1		1]				1
							1	l	i	i	l	1	i	i	i		l	l

a. 5-25% carbonate.

Observations of fabric with stereoscopic microscope: No clay films observed in the Bi, B2, or B3. B2 has smooth planar surfaces; sand grains protrude. Classify three horizons as 0 or 1, probably 0.

Micromorphology (Method iEl). Essentially no clay films observed in B2. Perhaps here and there a very small one is tucked away in an out-of-the-way spot. But they are extremely sparse and small.

b. Analysis after carbonate removal (see method 1B3).

c. Noncarbonate clay.

d. Total clay.

e. Coefficient of linear extensibility.

Soil Type: *Buick loam Boil Nos.: S61Colo-3-8 Classification: Brown.

Location: 2,300 feet south, 89 feet east of the northwest corner of Sec. 2, T48, R60W, Arapahoe County, Colorado.

Climate: Continental, average annual precipitation of 14 inches. Mean annual temperature 49° F.

Growing season 150 days. Revation 5,200 feet.

Vegetation: Native pasture. Blue grams, buffalograss, pricklypear, some western wheatgrass, sixweeks fescue, and wild alfalfa.

Parent material: Outwash, probably quarternary age. Modern solum probably mixed local asolian material and outwash. Physiographic position: Upland.

Relief: Sloping 7 percent facing south. Slope about 400 feet long, grades toward small drainage way, and out by smaller subdrainage. Pit about 100 feet from crest of slope.

Drainage: Surface drainage rapid, internal drainage medium in buried soil, but slower than in the loss soils.

Moderate intake rate. Moisture: Moist to 12 inches. Usually dry. Water table: None.

Stoniness: Few fine water-worm gravel of quartz and feldspar on the surface and throughout the profile. Estimated

less than 5 percent by volume.

Salt or Alkali: None observed other than calcium carbonate. Brosion: Slight water and wind erosion.

Described by: J. B. Brown, June 29, 1961.

Lincoln Lab. No.

0 to 3 inches. Very dark grayish brown (10YR 3.5/2, moist) loam; grayish brown (10YR 5/2, dry) weak med-tum subangular blocks breaking to weak very fine granules; soft when dry, very friable when moist; few fine water-worn gravels; clear smooth boundary. 15541

3 to 6 inches. Very dark grayish brown (10YR 3.5/2, moist) loam; dark grayish brown (10YR 4/2, dry) moderate medium prisms breaking to weak medium angular blocks; slightly hard when dry, very friable when moist; thin very patchy clay films on some vertical faces; few fine water-worn gravels, and many roots; B3. 15542 clear amooth boundary.

6 to 10 inches. Dark brown (10YR 4/3 moist and crushed) light clay losm; brown (10YR 4.5/3, dry) moderate medium to fine prisms breaking to moderate fine angular blocks; slightly hard when dry, friable when 15543 moist; thin patchy clay films on all ped surfaces; some dark stains on ped surfaces; few fine water-worn gravels; many roots penetrating peds; abrupt slightly wavy boundary.

R2ca 10 to 12 inches. Brown (10YR 4.5/3, moist and crushed) heavy loam; brown (10YR 5.5/3, dry) moderate fine 15544 angular blocks; slightly hard when dry, friable when moist; thin patchy clay films on all ped surfaces; few fine water-worn gravels; many roots and pores; strong to violent effervescence; abrupt smooth boundary.

12 to 24 inches. Brown (10YR 5/3, moist) light clay loam; pale brown (10YR 6/3, dry) weak to moderate medium prisms breaking to moderate medium and fine subangular blocks; hard when dry, friable when moist; II B2lca 15545 thin patchy clay films on ped surfaces; roots and pores plentiful in this horizon; few fine water-worn gravel present; lime concretions are common medium and distinct; violent effervescence; gradual smooth boundary.

24 to 32 inches. Brown (10YR 5/3, moist) clay loam; pale brown (10YR 6/3, dry) weak medium prisms breaking to moderate medium subangular blocks; hard when dry, firm when moist; thin very patchy clay II B22ca 15546 films on some vertical faces; some roots and channels; few fine gravels present; lime concretions are common fine and distinct; wielent effervescence; clear smooth boundary.

32 to 42 inches. Yellowish brown (10YR 5/3.5, moist) clay loam; light yellowish brown (10YR 6.5/3.5, dry) strong coarse to very coarse prisms; very hard when dry, firm when moist; thin nearly continuous clay films; dark stains on ped surfaces; few roots; few fine water-worn gravels present; lime concretions III B2lca 15547 are common medium to coarse and distinct; strongly efferwacent between congretions; congretions are violently effervescent; gradual smooth boundary.

42 to 55 inches. Yellowish brown (10YR 5/3.5, moist) clay loam; light yellowish brown (10YR 6.5/3.5, dry) moderate to strong coarse and very coarse prismatic; very hard when dry, firm when moist; thin nearly continuous clay films and some dark stains on peds; few fine water-worn gravels present; lime concre-III B22ca 15548 tions are common medium to coarse and distinct; strongly efferwescent between concretions; violently effervescent in concretions; gradual boundary.

III B23ca 55 to 72 inches. Yellowish brown (10YR 5/3.5, moist) clay losm; light yellowish brown (10YR 6/3.5, dry) moderate coarse to very coarse prisms; very hard when dry, firm when moist; thin patchy clay films; 15549 few fine water-worm gravels present; lime concretions are common medium and distinct; strongly effervescent between concretions; concretions are violently effervescent.

Remarks: This soil is found on the side slopes beneath the Acolian Loess caps, and above residual soils on shale at the foot of slopes. The buried soils are quite distinctive; although it is hard to distinguish a difference between them and the modern soil. Dark staining of ped surfaces and clay films are the distinguishing characteristics. The II Eca horizon was separated as a buried horizon on consistence. It may be a B3ca horizon rather than a buried Bureau of Public Roads Samples: Al, 0-3 inches; B2, 6-10 inches; III B22ca, 42-55 inches. horizon.

		1		Perce	nt of Total	Sand	1	Ratio Coarse
ISL No.	Rori zon	Total Sand	Very Coarse Sand	Coarse Sand	Medium Send	Fine Sand	Very Fine Sand	Over Fine Silt
15541	Al	42.1	1.9	3.8	7.8	22.1	64.4	3.5
15542	B1.	40.4	2.5	3-7	8.7	25.0	60.1	3.3
15543	B2t	32.8	1.5	3.4	7.6	21.3	66,2	3.9
15544	B2ca	33.0*	1.8*	3.0*	7.3*	21.5*	66.4*	2.9
15545	II Belca	35.9*	1.9*	3.3*	7.8*	21.4*	65.4*	2.5
15546	II B22ca	35.0*	2.3*	2.8*	6,3*	22.0*	66.6*	2.3
15548	III E22cs	27.3*	3.7*	2.6*	6.2*	31.9*	55.7*	11
15549	III B23ca	38.9*	4.1*	4,4*	7.7*	36.8*	47.0*	1.3

* Carbonate removed with pH-5 NaCAc buffer.

SOIL SURVEY LABORATORY Lincoln, Nebr. June 1961

SOIL TYPE *Cabin LOCATION Gunnison County, Colorado
fine sendy loam

SOIL NOS. 859Colo-26-4 LAB. NOS. 12004-12009

***** *******************************	H== T==(1 50pp =100 0p q)	MB=437 125320 414904		***********	4774717171717141141	105494747678784884444871	E0414)110-1484471844046	146741424410147903	FFFE1+44+4+4+1+4+4+4+4+4+4+4+4+4+4+4+4+4+4+	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		*************
	i	\	na	PARTI	CLE SIZ	E DISTRIB	UTION (in	mm.) (pi	r cent)	3A1		
DEPTH	HORIZON	VERY CCARSE	COARSE	MEDIUM	FINE	VERY FINE					2A2	TEXTURAL CLASS
		SAND	SAND	SAND	SAND	SAND	SILT	CLAY			> 2	
		2-1	1-0.5	0.5-0.25	0. 25-0, 10	0.10-0.05	0.05-0.002	< 0.002	0,2.0.02	002-0002	(<19=)
0-3 }	All	21.6	18.7	6.4	7.7	5.4	27.7	12.5	24.5	12.3	Tr.	cosl
3 1 -8	A12	30.5		4.0	7.4	5.0		12.9	20.9	10.3	25	cosl
8-14	B1.	16.0			12.6	7.8		14.0	25.7	9.4	20	cosl
14-22	B2	20.3			11.8	6.0		11.7	20.0	8.7	25	cosl.
22-32 32-41	133 C	20.9	23.9 26.1		12.0 15.9	5.3 6.2	16.3 12.7	11.7 6.8	19.6 20.0		26 34	cosl lcos
32-41		20.1	20.1	72.6	47.7	0.2	75.1	0.0	20.0	0.7	5 +	100
 		 	***************************************		************		parellatizamenteria.	************	Philippini	111113990000000000000000000000000000000	 	***********
h	. pH	بجمية معمي	ORG/	MIC MA	TTER	6Cla				MOIST	URE TE	NSIONS

Soil Type: * Cabin fine sandy loam.

Date: Sept. 1959, by W. Goddard, J. S. Allen, L. Juve, U. J. Fox

Area: Gunnison County, Colorado

Location: Swa of NWa of Sec. 16, T. 14 S., R. 82 W. Near east edge of photo 2719

Parent Material: Granitic glacial outwash

Physiographic position: Glacial outwash at elevation of 9,475 feet.

Topography: Surface of very gently sloping benchlike area with 2 percent gradient.

Drainage: Well drained

Vegetation: Big sagebrush (Artemisia tridentata), ring muhly (Mullenbergia torreyi), fescue, cacti, Jacob's ladder. About 70% of ground surface has vegetative cover.

Use: Rangeland Described by: Charles J. Fox.

Soil Nos.; S-59-Colo-26-4

Remarks: Gravel up to 1 inch in dismeter occupy approximately 10 percent of surface area.

Lincoln Horison

Lab. No.

1200h All 0-3 Brown (10YR 1/3 dry) to dark brown (10YR 3/3 moist) fine inches sandy loam; weak very fine granular structure; soft when dry, very friable when moist, nonplastic when wet; sand grains stained; approximate pH 6.5; roots plentiful;

lower boundary clear and wavy.

12005 A₁₂ 3½-8 Brown (10TR 1/3 dry) to dark brown (10TR 3/3 moist) fine inches sandy loam; weak medium angular blocky structure breaking to moderate fine granules; slightly hard when dry, very friable when moist, nonplastic when wet; sand grains stained; about 5 percent of horizon is gravel; approximate pH 6.5; roots plentiful; lower boundary clear and wavy.

8-14 Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) inches gravelly sandy clay loam; weak medium angular blocky structure breaking to medium fine granules; hard when dry, firm when moist, slightly plastic when wet; sandy grains stained;

SOIL SURVEY LABORATORY Lincoln, Nebr. June 1961

SOIL TYPE *Cabin LOCATION Gunnison County, Colorado fine sandy loam

SOIL NOS. S59Colo-26-5 LAB. NOS. 12010-12015

femeterminime	76H01#31**********	181	3 <u>.</u>	PARTI	CLE SIZ	E DISTRIB	UTION (in	mm.) (pe	r cent)	3A		***************************************
DEPTH		VERY				VERY					2A2	TEXTURAL
INCHES	HORIZON	SAND	COARSE SAND	MEDIUM SAND	FINE SAND	FINE SAND	\$ILT	CLAY			> 2	CLASS
		2-1	1-0,5	0,5-0.25	0, 25-0, 10	0,10-0.05	0.05-0,002	< 0.002	0.2-0.02	Q02-Q002	(<1.9mm)
0-4	All	11.4	12.2	6.6	10.2	9.4	35.8	14.4	34.6	15.8	Tr.	1
4-8	A12	9.3	11.2		11.8		34.1	15.3			Tr.	1
8-11	BJ	10.3			13.4	11.9	29.5	15.4		12.2	Tr.	fsl/sl
11-22	B2	16.1			15.4	8.5	18.0 24.6	16.0			27	cosl
22-34 34-41	B3 C	9.0 14.1	16.7 22.8		15.3 17.6	10.0	16.6	13.8 7.3		10.2 7.7	45 31.	cosl cosl
J4-41	C	T4.T	22.0	T.H.O	7(.0	10.0	10.0	1.3	21.0	1.1	بدر	COST
Total transmission		***************		711 - 14 V					****************	MOIST		Meimmunning

Soil Type: *Cabin fine sandy loam.

Date: Sept. 1959, by W. Goddard, J. S. Allen, L. Juve, C. J. Fox

Area: Gunnison County, Colorado

Location: SW2 of NE2 of Sec. 22, T. 14 S., R. 82 W. Photo 2664. Directly north of Holt's Guest Ranch on benchlike area.

Parent material: Granitic glacial outwash

Physiographic position: Glacial outwash at an elevation of 9475 feet. Topography: Very gently sloping benchlike area with 2 percent gradient.

Drainage: Well-drained

Vegetation: Dominantly big sagebrush (Artemisia Tridentata), ring muhly (Muhlenbergia torreyi), Arizona fescue. Some Junegrass (Koleria cristata) and stonecrop (Sedum spp.) about 70 percent vegetative ground cover.
Use: Rangeland Described by: Charles J. Fox.

Described by: Charles J. Fox. Soil Nos. S-59-Colo-26-5

Remarks: Gravel and a few small stones cover about 10 percent of surface area.

Lincoln Horizon Lab. No.

- Brown (10YR 4/3 dry) to dark brown (10YR 3/3 moist) fine 12010 0-4 All inches sandy loam; weak very fine granular structure; soft when dry, very friable when moist, nonplastic when wet; sand grains stained; approximate pH 6.5; roots plentiful; lower boundary abrupt and smooth.
- 12011 4-8 Brown (10YR 4/3 dry) to dark brown (10YR 3/3 moist) fine A inches sandy loam; weak medium angular blocky structure breaking to moderate fine granules; a few small gravel; slightly hard when dry, very friable when moist, nonplastic when wet; sand grains stained; approximate pH 6.0; roots plentiful: lower boundary clear and wavy.
- Bı 12012 Brown (7.5XR 5/4 dry) to dark brown (7.5XR 4/4 moist) inches gravelly sandy clay loam; weak coarse porous platy structure breaking to weak medium angular blocky aggregates that in turn break to moderate fine granules; faint broken clay films; sand grains stained; hard when dry, firm when moist, plastic when wet; approximate pH 6.0; about 2 percent of volume of horizon made up of small stones; roots plentiful lower boundary clear and smooth.
- B2 12013 11-22 Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) grainches velly clay loam; weak coarse prismatic structure breaking to weak medium angular blocky peds that crush to moderate fine granules; faint complete clay films; very hard when dry, very firm when moist, plastic when wet; send grains stained; approximate pH 5.5; about 3 percent of this layer is rounded stones: roots plentiful: lower boundary gradual and wavy.
- 12014 Βą 22-34 Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) grainches welly sandy clay loam; weak medium angular blocky structure breaking to moderate fine granules; extremely hard when dry, very firm when moist, plastic when wet; sand grains stained; about 8 percent rounded stones; roots few; approximate pH 6.0; lower boundary gradual and wavy.
- 12015 C 34-41 Light yellowish brown (10YR 6/4 dry) to yellowish brown inches (10YR 5/4 moist) gravelly loamy sand; single grain structure; sand grains stained; approximate pH 6.0; rounded glacial stones occupy about 40 percent of this layer; no roots.

Bureau of Public Roads Samples: 0-8 inches, 8-32 inches, 32-41 inches.

SOIL SURVEY LABORATORY Lincoln, Nebr. 12/21/56 SOIL TYPE Campo LOCATION Baca Co., Colorado clay loam

SOIL NOS. 3-55-Colo-5-1 LAB. NOS. 3512-3519

H 15

•	**********	**************************************	1 B L		PARTI	CLE-SIZ	E DISTRIB	UTION (in	mm.) (pt	m ceut)	3A1		
	DEPTH		VERY COARSE	COARSE	MEDIUM	FINE	VERY FINE					2A2	TEXTURAL
	INCHES	HORIZON	SAND	SAND	SAND	SAND	SAND	SILT	CLAY			> 2	CLASS
į			2.1	1-0,5	0.5-0.25	0.25-0.10	0.10-0.05	0.05=0.002	< 0.002	0.2-0.02	0.02-0.002		L
	0-4	Al	0.2	1.9	5.4	5.1	10.0	56.7	19.7	46.2	23.1	-	sil
1	4-6	B1.	-	1.0	3.0	3.9	5.9	45.3	40.9	32.7	20.3	-	sic
	6-14	B21 t	-	0.7	2.1	2.5	4.3	38.4	52.0	25.9	18.0	-	c
	14-18	B22 t		_0.6	1.5	_1.9	4.1	49.2	42.7	29.6	24.6	-	sic



Soil Type: Campo clay loam Location: 650 feet west and 20 feet south of the northeast corner of Sec. 10, T338;

RL:7W; Baca County, Colorado. Date of Sampling: October 6, 1955

Collector: A. J. Cline.

Described by: A. J. Cline

Physiographic Position: Upland.

Topography: Nearly level to slightly concave area of less than 1 percent slope.

Drainage: Moderately well drained

Vegetation: Elue grama, Buffalo grass, Russian thistle

Use: Pasture

Soil Nos.: S55Colo-5-1

Lincoln Laboratory Nos.: 3512-3519

Light brownish gray (TOYR 6/2 dry) to dark grayish 0-4 inches brown (10YR 3.6/2 moist) light silty clay loam; soft A₁ when dry, very friable when moist; moderate, fine crumb structure; noncal careous; lower boundary clear and smooth. LSL 3512

4-6 inches Вı LSL 3513

(10YR h/2 moist) heavy silty clay loam; slightly hard to hard when dry, friable when moist; moderate to strong, very fine subangular blocky structure; noncalcareous; thin continuous tonhautchen; the soil aggregates in this horizon are weakly coated with light . gray; lower boundary abrupt and smooth.

Grayish brown (10YR 5/2 dry) to dark grayish brown

6-14 inches B₂₁ t

LSL 3514

Grayish brown (101R 5/2.5 dry) to dark grayish brown (10YR 4/2.5 moist) silty clay; extremely hard when dry, very firm when moist; moderate to strong, medium prismatic structure breaking to strong, fine, angular blocks; noncalcareous; moderate continuous tonhautchen; lower boundary clear and smooth.

14-18 inches Boot

LSL 3515

Light brownish gray (10YR 6/2.5 dry) to grayish brown (10YR 5/2.5 moist) silty clay; extremely hard when dry, very firm when moist; moderate to strong, medium and fine, prismatic structure breaking to strong, fine angular blocks; calcareous; there is no visible segregation of lime; thin continuous tonhautchen; lower boundary gradual and smooth.

18-29 inches **B31ca**

LSL 3516

Very pale brown (10YR 7/2.5 dry) to pale brown (10YR 6/2.5 moist) heavy silty clay loam; very hard when dry, friable when moist; weak to moderate, medium and prismatic breaking to moderate, fine subangular blocks; strongly calcareous; this is a moderate lime horizon containing many large soft calcium carbonate concretions 1/h to 1/8 inch in diameter; few very thin very patchy tonhautchen; lower boundary gradual and smooth.

29-40 1aches B32ca

Very pale brown (10YR 7/3 dry) to pale brown (10YR 6/3 moist) silty clay loam; hard when dry, friable when moist; weak, medium prismatic breaking to weak, medium and fine, subangular block; violently calcareous; this is a moderate lime horizon containing moderate numbers

LSL 3517

of small concretions and some finely disseminated lime; lower boundary gradual and smooth.

LO-52 inches Cos

Very pale brown (10YR 7/3 dry) to pale brown (10YR 6/3 moist) silt loam; hard when dry, friable when moist; massive, to very weak, coarse subangular blocky structure; violently calcareous; this is a weak to moderate dime horizon containing very few of the concretions of the above two horizons but with some finely disseminated

LSL 3518

lime; lower boundary gradual and smooth.

52-60 plus inches Light yellowish brown (10YR 6/3.5 dry) to yellowish brown (10YR 5/h moist) silt loam; hard when dry. friable when moist; massive; strongly calcareous; this is a weak to moderate lime horizon but contains noticeably less lime than the horizon above.

LSL 351,9

SOIL	SURVEY LABOR	ATORY Lincoln, Nebr.	12/21/56
SOIL	TYPE Campo	LOCATION Baca	Co., Colorado

SOIL NOS. S-55-Colo-5-2 LAB. NOS. 3520-3525

 	***************************************	1Bla	181a PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent)							3A		
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURAL CLASS
		2.1	1-0.5	0.5-0.25	0. 25-0. 10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	202-2002		
0-7	Ap	0.2	3.2	4.7	6.0	13,1	45 . 5	27 3		168		cl
7-15 15-24	B21 B22	0.1	3.0 1.5	4.0 2.3	5.2 3.4	9.4 10.0	35・5 41・3	42.8	33.3 35.5	14.2 18.1	-	c sic
	B31ce	1	0.8	1.4	2.5	8.5	47.1	39.5		21 3		sicl
32-41	B32ca	1	0.2	0.3	3.6	4.3	57.2	37.1	,	29.1		sicl
41-50	Cca	_	0.1	0.2	0.5	5.2	30.9	33.1	37.4	29.0	-	sicl
50-64+	С	-	-	0.1	0.4	5.3	53.7	30.5	39-5	29.4	-	sicl
**************	pH 8C1A ORG		ANIC MATTER		ELECTRI-		6Rla	1 1117445444414141	MOIST	MOISTURE TE		
	1:5		6Ala ORGANIC CARBON	6BLa	C/N	EST# SALT (BUREAU CUP)	CAL CONDUC- TIVITY EC-103	CaCOs	GYPSUM 		1/3 AOMTA	4B2
1:1	, .		*	5	Φ".	COF,	MILLIMHOS	9,	1	*	%	5
7.9 7.2 7.8 8.0 8.0 8.1 6.3	8.3 7.5 8.3 8.1 8.6 8.6 8.9	8.5 8.7 8.8	0.91 0.75 0.52 0.42 0.35 0.28 0.22	.093 .079 .065 .051	10 19 ၁			1 5 8 13 15 11				10.8 17.5 16.0 16.1 15.6 14.4 14.2
		EXTRAC		CATIONS		100+0blasbestest				T SOLU		; ;; ===19=9>3+43+3 0*** +++
5ALA CATION EXCHANGE CAPACITY	6 #2 b	602ь		6 P2a	6 92a					. 3020		MOISTURE AT SATU-
NH ¹ JAc	C-	Mg	н	No	K		Ne	K				RATION
141240	ļ	millioquiv	elents per	UUg. son	· · · · · ·		*	- williedn	valents p			
22.0 25.8 25.8 24.8 24.0 21.4 22.4	19.9	3.3 8.7		0.1 0.1 0.1 0.2 0.6 1.1	2.0 1.5 1.5 1.3 1.2 1.3				ANALON CONTRACTOR CONT			

Location: 115 feet west and 40 feet north of the southeast corner of Sec. 33, T31S;

Date of Sampling: October 6, 1955

Described by: A. J. Cline.

Collector: A. J. Cline

Physiographic Position: Upland

Topography: A nearly level to slightly concave area having a slope of

less than 1 percent.

Drainage: Moderately well drained

Vegetation: Winter wheat Use: Cultivated land Soil Nos.: S550010-5-2

Lincoln Laboratory Nos.: 3520-3526

0-7 inches (Ap

Grayish brown (10YR 5.5/2 dry) to dark grayish brown (10YR 1/2 moist) silty clay loam; soft when dry, very friable when moist; moderate, fine crumb structure;

LSL 3520

noncalcareous; lower boundary clear and smooth.

7-16 inches B_{21}

Dark grayish brown (10YR h.5/2 dry) to very dark grayish brown (10YR 3.5/2 moist) silty clay; extremely hard when dry, firm when moist; moderate to strong, medium prismatic structure breaking to strong, fine, angular block;

LSL 3521

16-2h inches

B₂₂

noncalcareous; moderate continuous tonhautchen; lower boundary clear and smooth.

Grayish brown (10YR 5.5/2.5 dry) to dark grayish brown (10YR 4.5/2.5 moist) silty clay; extremely hard when dry, firm when moist; moderate to strong, medium prismatic structure breaking to strong, fine, angular

LSL 3522

block; calcareous; there is no visible lime in this horizon; thin continuous tonhautchen; lower boundary

gradual and smooth.

24-32inches B31ca

Light brownish gray (10YR 6/2.5 dry) to grayish brown (10YR 5/2.5 moist) heavy silty clay loam; very hard when dry, firm when moist; weak to moderate, medium prismatic structure breaking to moderate, medium,

LSL 3523

angular and subangular blocks; strongly calcareous; this is a weak to moderate lime horizon containing common number of soft caldium corbonate concretions

SOIL	SURVEY	LABORAT	ORY Line	oln, N	lebr.	February	1959	••••••
SOIL		Chubbs	LOCATIO	ON	Chaffee	County, (olorado	********

SOIL NOS.

\$580010-8-6 LAB. NOS. 9071-9074

*************			l Rla				UTION (in				3A1	- - - -
DEPTH INCHES	HGRIZO:I	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTUR/ CLASS
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	9.95-0.002	< 0.002	6, 2-0, 02	0 03-0003	(<) 9mm	.)
0-2	A2	2.8e	3.0a	2.3a	6.2a	17.8a	50.0	17.9	51.0	21.3	24	sil/1
2-9	B2t	2.9a	2.5a		4.6a	12.3a		42.4	31.8	17.2	3 6	c ′
9-13	ВЗса		4.8ъ	2.7ь	8.3b	17.26	33.6	23.2	41.8	14.4	52	1
13-17	Cca	7.1c	6.2c	3.8c	10.2c	17.4c	34•3	21.0	40.8	17.3	5 6	1
M104414106M0440741	PH			NIC MA		Free	***************************************	6Ela	1		URE TE	NSIONS
8 c1 a			6Ala	6Bla		Iron		CoCO ₃	ļ			4382
OCIA			ORGANIC	NITRO-	C/N	%Fe ₂ 03		equiv-	į,	1/10 ATMOS.	1/3 ATMOS.	15 ATMOS
	1:5	1:10	CARBON		UN	6Cla		%			%	% %
			%					7		%	70	ļ
6.6			2.61	0.116		1.6		į	ļ			8.3 16.4
0.4			1.42 2.46			2.2		02]		13.6
6.4 7.9 8.0			3.14	0.138 0.154		0.7		23 40	ĺ			15.0
0.0			2.74	0.174	20	0.7		40				17.0
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5 Ala	. (460025421520154)	EXTRAC	TABLE	CATIONS	5 B la	BASE	5C3	Sun	Sum	, Ca/Mg		1
CATION X THANGE	~	602ъ	6на	6P2a	692a.	SAT.	Base	1	Cation			I
Y THANGE	Co	Mg	н	No	K	NH4AC	Sat. %	5Bla	5A3a	į]
Na ₄ Ac		•	alents per	I	1	5C1.	on Sum]	0==	1	1
							Cations		*	7		 -
18.6	14.5	3.5	5.2	<0.1	0.8	101	78	18.8	24.0	4.1		İ
3!1.3 23.1	24.9	8.4	5.4	<0.1	0.8	99	86	34.1	39.5	3.0		
23.1	I	5.1 5.6	<0.1 <0.1	<0.1 <0.1	0.3				į	1		į

Soil Type: Chub's clay loam. Described by: A. J. Cline Location: The SW of Sec. 33, T135, R77W, Chaffee County, Colorado. Date of Sampling: September 1957.

Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline.

Physiographic Position: Upland mountain side at an elevation of approximately 9.500 feet.

Topography: Moderate convex slope of approximately 8 percent facing north.

Drainage: Well drained. Vegetation: Spruce, fir, aspen.

Use: National Forest Service land

Soil Mas.: 858Colo-8-6

Lincoln Horizon

Lab. No. An organic met made up mostly of undecomposed pine needles. 13-0 00 inches Horizon not sampled.

Light brownish gray or light gray (10YR 6.5/2 dry) to 9071 **A**⁵ 0-5 grayish brown (10YR 5/2 moist) loam; soft when dry, very inches friable when moist: week to moderate fine platy structure breaking to moderate fine granules; noncalcareous; lower boundary abrupt and smooth.

B_{2**t**} 2-9/ 9072 Brown (7.5YR 5/4 dry) to brown or dark brown (7.5YR 4/4 inches moist) gravelly clay loam; hard when dry, friable when moist; moderate medium subangular blocky structure, breaking to moderate to strong very fine subangular blocks; noncalcareous; there are thick continuous clay skins on the surfaces of most of the soil aggregates; approximately 20 percent of this horizon is gravel; lower boundary gradual

and smooth.

B_{3ca} inches 9073 Grayish brown or light brownish gray (10YR 5.5/2 dry) to brown (10YR 4.5/3 moist) gravelly loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure, breaking to moderate fine crumb; violently effervescent; this is a weak horizon of lime accumulation with some visible lime occurring as concretions and as coatings on the gravel; approximately 30 percent of this horizon is gravel; lower boundary gradual

and smooth.

C_{ca} 907山 13-17 White (10YR 8/2 dry) to light brownish gray (10YR 6/2 moist) inches stony loam; slightly hard when dry, very friable when moist; massive; violently effervescent; this is a prominent horizon of lime accumulation with visible lime occurring in finely divided forms; approximately 50 percent of this horizon is stone; lower boundary gradual and smooth.

D 17-23 Partially weathered and fractured bedrock limestone of inches Pennsylvanian age. This horizon was not sampled.

SOIL	SURVEY LA	BORATORY	Lincoln, Ne	br. Februa	ry 1959	
SOIL	TYPE Chubbs	LO	CATION	Chaffee Cou	nty, Colorado	

SOIL NOS. <u>\$580010-8-8</u> LAB. NOS. 9078-9081

	***********	18				E DISTRIG						
MEDTH						VERY		<u> </u>		 	2A2	TEXTURAL
DEPTH INCHES	HORIZÓN	COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	FINE SAND	SILT	CLAY			> 2	CLASS
		2-1	1-0.5	0.5-0.25	0.25-0.10	C. 10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002	(<19mm	اا
0-2	AI.		1.5a		4.8e			24.4				sil
2 } -6	B2t		1.la 2.5b		2.8a 4.4b	11.0a	44.0 42.2	39.4	33.2 36.7	23.9	10 35	sicl cl
11-19	B3 Cca	4.25		3.0b	6.50			29.7	29.0	26.9	35	cl
					•				-			
	A C					3 <u>6</u> 443944303030333334333						
	, .pH		ORGA	INIC MA		Free		6Ela			URE TE	NSIONS
8CLa			: :	6Bla		Iron		CaCO3		1/10	1/3	4B2 15
	1;5	1:10	ORGANIC CARBON	GEN	C/N	%Fe ₂ 03	,	equiv- cient	,	ATMOS.		ATHOS.
1:1			%	. %		6Cla			~===	. %	%	%
6.7				0.460 0.097		1.9 2.6		2				17.2 13.9
7.3 7.7				0.097		2.2		13				11.6
7.7	l		5.46	0.259	2í	1.2		52				21.8
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5Ala		EXTRAC	TABLE	CATIONS	5Bla	BASE SAT.	_5 c 3			, -		***************************************
CATION		602b	6Юа	6 P2a	6 92a	NH [‡] Ac	Base Sat. %		Cations			
NH _L ACITY	Co	Mg	н	Na	K	EXCH.	on Sum	5 Bla				
+	{		alents per			5 C1	Cations	<-me/	100g→	813		
35.9		2.7 1.8			1.6 1.1	109	82	39.1	47.7	12.9		
25.8 23.2		1.7		<0.1 <0.1	0.5							
25.4			<0.1	•	0.2							
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a.	Few i	rregul	ar dar	brow	n to b	lack cor	cr. (Fe	Mn?)	Also,	commo	CaC	03 concr
ъ.	Few i:	rregul	ar dar	k brow	n to b	ack con	cr. (Fe	+Mn?)	Also,	many	caco3	coner.
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71

Soil Type: Gubbs clay loam.

Location: The Sw2 of Sec. 23, T13S, R77%, Chaffee County, Colorado.

Date of Sampling: September 1957

Collectors: J. Retzer, E. M. Payne, R. Danscill, A. J. Cline

Physiographic Position: Upland mountainous area at an elevation of approximately 9,500 feet.

Topography: Moderately steep convex slope of approximately 20 percent facing west. Drainage: Well drained. Vegetation: Spruce, fir, aspen, with a moderate to thin understory of grasses and sedges.

Use: National Forest Service land.

Soil Nos.: \$58Colo-8-8

Lincoln Horizon

Lab, No.

9078 A 0-2 inches

Dark gray (10YR 4/1 dry) to very dark grayish brown (10YR 3/2 moist) loam; soft when dry, very friable when moist; moderate fine crumb structure; noncaltareous; lower boundary abrupt and smooth. The surface 1/4" of this horizon is an organic mat made up of partially decomposed and undecomposed forest refuse.

A₂ 2-2½ inches

Pink (7.5YR 7/4 dry) to brown (7.5YR 5/3 moist) gravelly loam; soft when dry, very friable when moist; weak to moderate fine platy structure; noncalcareous; this is a thin, but in places distinct horizon, however, it may be absent in some parts of the area. Because of its inconsistency and thinness it was not sampled; lower boundary abrupt and smooth.

9079 B 2 1-6 inches

Brown (7.5YR 5/h dry) to brown or dark brown (7.5YR 4/4 moist) stony clay loam; hard when dry, very friable when moist; moderate, medium and fine subangular blocky structure; noncalcareous; there are moderate continuous clay skins on the surfaces of the soil aggregates and coating the rock surfaces: approximately 40 percent of this horizon is stone; lower boundary gradual and irregular.

9080 B₃ 6-11 inches

Brown (10YR 5/3 dry) to dark brown or brown (10YR h/3 moist) stony light clay loam; hard when dry, very friable when moist; weak to moderate fine subangular blocky structure breaking to moderate fine granules; strongly effervescent; there are thin patchy clay skins on both the horizontal and

SOIL TYPE colby LOCATION Provers County, Coloredo silt loem

SOIL NOS. 858Colo-50-2 LAB. NOS. 9675-9681

**************************************		18	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	PAPTI		mmmmmm F MSTRIS	UTION (in		mmmmmm e cart	Ϋ́Αϊ	mentaliani	,
		[[755.37			===/ _14 ;		يومير	2A2	
DEPTH	HORIZON	COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	FINE SAND	SILT	CLAY			> 2	TEXTURAL CLASS
		2-1	1-0.5	0,5-0.25	0.25-0.10		0.05-0.002	< 0.002	0.2-0.32	002-0002		
0-2	Apl	0.2	0.4	0.6a	11.la	33.6a	38.2	15.9		11.1	-	1
2-4	_	∞.1	0.1	0.2a	8.la	25.2a	47.7	18.7			-	1
4-11 11-18	AC Cl	<0.1	0.1	0.2a	5.6a	21.8a	54.7		62.5		-	sil
13-27		<0.1 <0.1	0.1	0.la 0.lb	3.5a 5.5b	18.8a 21.2b	59.6 56.2		60.7 63.8		Tr.	811
27-44		<0.1	0.1	0.2b	7.6b	23.15	55.6	13.4			-	sil sil
44-60+		<0.1	0.1	0.1b	6.2b	25.50	56.2	11.9			-	sil
1404304191919944469	hammunni pH	<u> </u>	ORG	NIC MA	TTER	8A2	ELECTRI-	6Ela	6Fla	MOIST	URE TE	NSIONS
8Cla		**	6Ala	6Bla		EST%	CAL					4122
			ORGANIC	NITRO-		SALT (BUREAU	TIVITY EC . 103		GYPSUM me./100g.	1/10	1/3	15
1:1	1:5	1:10	CARBON	GEN %	C/N	CUP)	MILLIMHOS BER CM BALA	aquiv- Glant %	SOIL	ATMOS.	ATMOS. %	.ecmta *
7.9		•		0.082	9	<0.20	0.7	5				7.3
7.8				0.081	9	<0.20	0.5	8				9.5
7.9			<u>.</u> '	0.057		<0.20	0.5	9 8				8.6
8.0				0.043	9 8	<0.20	0.5				,	8.4
8.0				0.039	9	<0.20	0.7	7				7.6
8.2			0.16			<0.20	1.0	6				6.7
8.5			0.14			<0.20	0.9	6				6.5
5Ala				CATIONS		502	BALSATU	RATION	EXTRAC	T SOLU	3LE	8A
CATION				6P2a	692a		6Pla	6 Q 1a				MOISTURE
EXCHANGE CAPACITY NELAC		Mg	H	No 100g. sol	K	EXCH. No	Na	K	volents pe	u liana		SATU- RATION
				1009. 101								
11.2				<0.1	1.0	a	0.4	1.0				44.4
11.6				<0.1	0.7	Q	0.3	0.5				51.2
12.0				<0.1	0.5	Q.	0.3	0.3				51.2
15.5 14.4				0.1	0.7 0.7	1	0.4 0.8	0.3				49.2 45.9
13.0				0.8	o.8	5	4.1	0.4				43.6
13.2				1.6	0.8	16	5.9	0.3				44.0
					.,,			0.5				'''
_												
a. Trac b. Few	e CaCO CaCO3					,						
1)				•	ł	•	i	i	i i

MANO

Soil Type: Colby silt loam. Classification: Sierozem.

County, Colorado. Date Sampled: November 4, 1958 Climate: Continental type climate, average annual precipitation 13 inches, elevation 3,810 feet. Frost free season 165 days. Vegetation: Dryland, wheat-fallow; wheat , 1958. Parent Material: Loess or acolian Physiographic position: Upland. Relief; Gently rolling, 2% slope. Drainage: Good. Moisture: Dry. Watertable: None encountered. Stonings: None. Salt or Alkali: None observered other than calcium carbonate. Erosion: Moderate wind erosion. Soil Nos.: S-8-Colo-50-2 Described by: E. Milton Payne. Lincoln Horizon Lab. No. 9675 Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) silt Ap_{1} inches loam: weak fine subangular blocky structure breaking to weak fine granular; soft when dry, very friable moist; strongly calcareous; clear smooth boundary. 9676 Pale brown (10YR 6/3 dry) to brown (10YR 4.5/3 moist) loam; Ap2 2-h inches massive to weak coarse platy; very hard when dry, friable moist; this is a tillage pan with light colored streaks (10YR 7/3 dry), strongly calcareous; clear smooth boundary; appears to be abrupt due to plow depth. 9677 A¢. L-11 Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist and inches crushed) loam; very weak coarse prismatic breaking to very weak coarse subangular blocky structure; hard when dry, very friable moist; violently calcareous; gradual smooth boundary. 9678 c₁ 11-18 Very pale brown (10YR 6.5/3 dry) to brown (10YR 5/3 moist) (10YR 5.53 crushed moist) loam; weak coarse prismatic inches breaking to very weak medium to coarse subangular blocky structure; slightly hard when dry, very (riable moist;

smooth boundary.

c⁵

18-27

inches

9679

violently calcareous, containing a few lime nodules; gradual

Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) (10YR

5/2.5 crushed) very fine sandy loam; massive to a very weak coarse subangular blocky structure; slightly hard when dry, very friable moist, contains many krotovinas; violently calcareous; gradual smooth boundary.

SOIL SURVEY LABORATORY Lincoln, Nebr. May 1959

SOIL TYPE Collay LOCATION Provers County, Coloredo

silt loam

SOIL NOS. S58Colo-50-3 LAB. NOS. 9682-9687

1819 PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent) 3A1 2A2 DEPTH HORIZON COARSE COARSE MEDIUM FINE SAND SAND VERY FINE SAND TEXTURAL CLASS SILT > 2 CLAY 2.1 1-0.5 0.5-0.25 0.25-0.10 0.10-0.05 0.05-0.002 < 0.002 0.2-0.02 0.02-0.092 0.2 0.3 0.5a 9.2a 41.3a <0.1 <0.1 0.1a 4.0a 22.5a <0.1 0.1 0.1a 3.0a 19.2a <0.1 0.1 0.1a 2.8a 18.3a <0.1 0.1 0.1a 2.9a 18.7a 32.6 | 15.9 | 72.6 | 9.2 | 9.4 | 23.0 | 58.1 | 18.4 | 55.8 | 21.8 | 57.3 | 20.4 | 0-3 Alp **3-**6 A12 sil/1 6-11 AC sil 58.8 19.9 59.1 20.5 11-23 C1 sil 23-31 C2 59.9 18.3 61.3 19.9 sil 31-60+ C3 <0.1 0.1 0.la 2.6a 18.6a 62.1 16.5 63.1 19.9 sil pH ORGANIC MATTER 8A2 ELECTRI- 6Ela CAL CONDUC-TIVITY CaCO3 EC-103 equiv-MOISTURE TENSIONS рΗ 8Cla 6Ala 6Bla EST% 4B2 15 CaCO3 GYPSUM EC × 103 equivalent per CM % ORGANIC NITRO-(BUREAU me./100g. 1/10 1/3 SOIL ATMOS. ATMOS. 1:5 1:10 C/N ATMOS. 1:1 0.73 | 0.080 | 0.66 | 0.078 | 7.9 7.8 < 0.20 5 0.9 8 7.9 < 0.20 11.2 0.5 12 7.9 0.52 0.062 8 < 0.20 0.5 11 10.2 8 8.0 0.36 0.043 8 <0.20 0.5 8.9 6.0 8 7 8.3 0.24 0.030 <0.20 € 0.6 8.1 0.18 <0.20 0.6 7.9 SAISATURATION EXTRACT SOLUBLE EXTRACTABLE CATIONS 5Bla 8A MOISTURE ATU-SATU-RATION 5D2 5Ala CATION EXCHANGE CAPACITY 6P2a 602a 6Pla 691a K No ĸ Co No EXCH. 2277 A-

Soil Type: Colby silt loam.

Classification: Sierozem (Regosol)

Location: 150 ft. S, 450 ft. E of NW corner, Section 34, 123S., R47W., Prowers County, Colorado.

Date Sampled: November 4, 1958

Climate: Continental climate, average annual precipitation 13.00 inches, elevation 3.850 feet. Frost free season 160 days.

Vegetation: Wheat-fallow, wheat, 1958. Parent Material: Loess.
Physiographic position: Upland. Relief: Nearly level, 2% slope. Drainage: well

Moisture: Slightly moist throughout profile. Watertable: None. encountered.
Salt or Alkali: None observed. Erosion: Moderate erosion, primarily wind.
Soil Nos. S-58-Colo-50-3 Stoniness: None.

Described by: E. Milton Payne.

Lincoln Horizon

Lab. No.

9682 Ap 0-3 Light brownish gray (10YR 6/2.5 dry) to dark grayish brown (10YR 4/2.5 moist) silt loam; very weak fine subangular blocky structure breaking to weak fine granular; slightly hard dry, very friable moist; violently calcareous; abrupt smooth boundary, caused by tillage implements.

9683 A₁₂ 3-6 Light brownish gray (10YR 6/2 dry) to dark grayish brown (10YR h/2 moist) mottled with lighter colored material, light gray (10YR 7/2 dry) to pale brown (10YR 6/3 moist) loam; weak very coarse platy; very hard when dry, friable moist; violently calcareous; this is a tillage pan; abrupt smooth boundary.

9684 AC 6-11 Light gray to light brownish gray (10YR 6.5/2 dry) to brown inches (5.5/3 moist) silt loam; very weak coarse prismatic breaking to very weak coarse subangular blocky structure; hard when dry, very friable moist; few thin patchy clay skins on vertical faces of peds; violently calcareous with few small lime concretions; gradual smooth boundary.

9685 G 11-23 Light gray to light brownish gray (10YR 6.5/2 dry) to grayish brown (10YR 5/2.5 moist) loam; very weak coarse prismatic breaking to very weak medium subangular blocky structure; slightly hard when dry, very friable moist; viplently calcareous with numerous lime spots; gradual smooth boundary.

9686 C₂ 23-31 Light gray (10YR 7/2 dry) to grayish brown (10YR 5/2.5 moist) very fine sandy loam; massive; slightly hard when dry, very friable moist; violently calcareous with few lime spots; gradual smooth boundary.

9687 C₃ 31-60 / Very pale brown (10YR 7/2.5 dry) to brown (10YR 5.5/3 moist) very fine sandy loam; massive; slightly hard when dry; very friable moist; violently calcareous with many fine pores.

Bureau of Public Roads Sample:

C - 31 - 60 /

SOIL Colby silt loam SOIL Nos. SCOColo-50-1 LOCATION Provers County, Coloredo
SOIL SURVEY LABORATORY Idnooln, Nebraska LAB. Nos. 14653-14655 Jamery 1966

		1Bla						\$iz	class and	particle dis	ameter (mm	1) ,	341					
	1		Totai				Sand				iit	Τ		Clay	341a	Coa	rse fragm	ents
Depth	Horizon	Sand	Silt	Clay	Very	Coarse	Medium	Fine	V		T	Int. Ⅲ	ì			_	1	
(in.)	Horizon	(2-0.05)		0.002		(1-0.5)		(0.25-0.1	Very fine (0.1-0.05)	0.05-0.02	Int. III (0.02- (0.002)	(0.2-0.02	(2-0.1)	ate	Mon- Carbon ate	2 .49 (<1 9)	Pet	19 -76 of
0-4	Al.	21.5	59.0	19.5	-	0.3a	0.46	1.86	19.0	39.1	19.6	59.7	2.5	1	19	Te		1
4-13	AC	14.2				0.2b	0.35	1.4b	12.2		24.1	10.1	2.0	5_	21			
13-30	_a	12.6	64.5	22.9	0.33	0.13	0.26	0.85	11.41		23.5			1 3	20	_		I
	 	ļ <u> </u>				_	Ι—				_	_		<u> </u>			 	_
	-											-						
					=	-	1 =	1=	=			_					_	
	 -						Ι					=						
	6Ala	6Bla			6Ele	1	 	Bulk densi		4111		ater conte		1	<u> </u>		T	H
Depth (in.)	Organic carbon	Nitrogen	C/N		Carbon- ate as]	Í	4Alc	Air-	COLE] -	4Blb	432	#185	401. 1/3-	8cub Set.		8C1
	/بو	1			CaCO 3		}	30-cm	*	9/	30-cm.		i	15-Ba	15-Ba:	Paste	ļ	
	Pet.	Pct.		!	Pct.	-	g/cc	2/cc	g/cc		Pct.	Pct.	Pct.		<u>in_/in</u>		- -	
<u>0-4</u>	1.33	0.124			5 -		 		1.32	0.028			17.6	10.9	0.14		7.7	8-5
4-13	0.89	0.095		-	<u> 11</u>			1.54	1.34	0.026	24.3	22.1	16.9	12.6	0.12		7.6	8.5
3-30	0.36	0.035	100		9								<u> </u>	10.9		7.5	7.8	8.6
	 	<u> </u>										<u> </u>	<u> </u>					
	-																_	
		1					-	<u> </u>										
											—							
	 	E-tennish	la batar		_		<u></u>	<u></u>	841		<u> </u>	Water	utract from	saturated			!	
		Extractable		5 K (a.	1		Cat. 1		94	· ·	6Pla	601a	ACCECT TON	38(0)8160) asie			8Ala
Depth (In.)	Ca	Mg	6P2a.	692s			Cag	5Ala	Ca	Mg	Na Na	K		co3	нсо3	Cī	50 ₄	Electrica conducti
	<u></u>	1			meq/100 g		<u> </u>	MH4 OA			<u> </u>	meg/i	iter —		<u> </u>		 	ity mmho/c
0-4			Tr.	1.4				17.9			0.4	0.8						0.8
h-13			0.1	1.1			L	18.6			0.7	0.5						0.8
3-30	 -	 	0.1	1.2	-	-		18.	-			0.6						0.7
			-									_	-				<u> </u>	_
	ļ —		F				<u> </u>				_							
							_											
			_															
	84	5112			Ratios	to CI	87	a.	5-251	certo	nate.	25-50	ore	nic m	tter.		===	
Depth	Water at	Exchange -		Gypsum	8111 NED. OAK	BIE OA	8m 35-	b.	5-251 25-50	orne	mate. Mic me	tter.						
(ìn.)	Saturation	Ma.			CIEC	CEC	Bar	a.	5.0 k	a/s²t	xo 20 1	nches.	Octone	ibilit;	7.			
<u> </u>	Pct.	Pct.	<u> </u>	Pct.	0.00	<u>f/</u>	1		Honos	rbonat	e clej	r.			•			
0 <u>-4</u>	53.1	ğ	 	 -	V. 72	0.99	V-20	1										
4-13	55.9	٩	├	├	0.72	0.88	뜻끊	1										
3-30	50.6	<u>a</u> _	 - -		0.79	0.90	0.46	1										
							ļ]										
	 -	 -			 			1										
								1										
	L	1	l	1	l	i	l	i										

Soil Type: Colby silt losm Soil Nos.: S50Colo-50-1

Inoation: 200 feet south and 300 feet west of the northeast corner, Sec. 7, TP2S, Rhiw, Prowers County, Colorado. Climate: Continental climate, average annual precipitation 13 to 15 inches, frost-free season 165 days.

Elevation: 3,550 feet. Parent Material: Locss.

Physiographic Position: Upland.

Melief: Mearly level, 0-1 percent slopes.

Brainage: Good. Moisture: Moist to 10 inches, dry below.

Water Table: Home. Stoninese: None. Salt or Alkali: Mone. Brosion: None.

Present Use: Mative range. Described by: James P. Pannell, November 14, 1960.

Horison and Lincoln Lab. No.

0 to 4 inches. Hight grayish brown (10YR 5.5/2 dry) to brown (10YR 4/3 moist and 4/2.5 moist crushed) A1 14653 silt loss; weak very fine granular structure; dry soft, moist very friable; strongly effervescent; clear smooth boundary.

4 to 13 inches. Light grayish brown (10YR 5.5/2 dry) to dark grayish brown (10YR 4/2 moist and 4/2.5 moist crushed) silt loss; very weak course prismatic structure breaking to very weak medium subangular blocky; dry slightly hard, moist friable; violently efferwescent; clear smooth boundary. AC 14654

13 to 30 inches. Pale brown (10TR 6/3 dry) to brown (10TR 5/3 moist and crushed) silt loss; weak coarse subangular blocky structure breaking to very weak medium subangular blocky; dry slightly bard, moist were CL 14655

ìÌÌ œ 30 to 60 inches plus. Very pale brown (10YR 7/3 dry) to yellowish brown (10YR 5/4 moist and crushed) SOIL Colby silt loam SOIL Nos S60Colo-

SOIL Nos. 850Colo-50-2 LOCATION Provers County, Colorado

SOIL SURVEY LABORATORY __IA pooln, Nebraska

LAB. Nos. 14656-14658 January 1966

	1		1	Rla.				Şize	class and	particle dia	meter (mm)	3	A)				
			Total				Sand			Si	It		,	CLEY	3Ala	Coa	rse fragm	ents
Depth (In.)	Horizon	Send (2-0.05)	Silt (0.05- 0.002)	Clay (< 0.002)	Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25) Pct. of -<	1	Very fine (0.10.05)	0.05-0.02	Int. III (0.02– 0.002)	Int. TI (0.2-0.02)	(2-0.1)	Carbon ate	Non- Carbon ate	2A2 > 2 (<19) Pct.	Pci	19 - 76 . of
0-3	A1	19.0	64.8	16.2	0.14	0.64	0.6	2.3	15.4	43.4	21.4	60-	3.6	_	16	Tr.		1
3-15	AC	20.0	57.9			0.5b	0.6ъ	3,15	15.70	35.3	22.6		b. 3	h	18	The .		1
15_42	CI.	20.1	63.5	16.4	-	0.26	0.40	2.9%	16.6	41.9	21.6		3.5	2	14	Tr.		
		ļ																
Depth (In.)	Organic carbon S/ Pct.	633.a. Nitrogen	C/N		Carbon- ate as CaCO 3			30-cm.	Air- Dey	431. 0012	423 30-cm	Bar	432 2-3ar	kme 15-Bar Pet.	4CI 1/3- Bar te 15-Bar		8c)a	801: 1:10
0-3	1.30	Pct.	11		Pct.	 	g/cc	g/cc 1.30	g/cc	0.020	Pct. 22. 3	Pet. 20.6	Pct.	9.9	0.14	7.5	7.7	8.4
3-15	0.89	0.093	10		8			1.2		6.024			15.1		0.12	7.5	7.7	8.5
15-42	0.25	0.026			7					-				8.5	Jeste	7.6	8.0	8.9
-								-										
																		
		Extractab	le bases	530a			Cat.	Monh.	SA1			Water	xtract from	saturated	paste			
Depth (In.)	Ca	Mg	6P2a,	6 92а. к			Ca		Ca	Mg	6Pla Na	к 601-		co3	нсо 3	CI	so 4	841a Electrical conductive ity
	_	'		<u>'</u>	meq/100 g			· •	-			meq/li	iter	1				mmho/cr
10.3	J	J	- F			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	7	T - X 7			1 1 1 1 1 1 1 1 1	T . A		1				

Soil Type: Colby silt loam
Soil Nos.: \$60Colo-50-2
Location: 0.2 mile north and 385 feet west of south quarter corner, Sec. 34, T228, R43W. Provers County, Colorado.
Climate: Continental climate, average annual precipitation 13 to 15 inches, frost-free season 165 days.

Elevation: 3,550 feet. Parent Material: Loess.

Physiographic Position: Upland.
Relief: Nearly level, 0-1 percent slopes.

Drainage: Good. Moisture: Moist. Water Table: None. Stoniness: None. Salt or Alkali: None. Erosion: None.

Present Use: Native range.

Described by: James P. Pannell, November 18, 1960.

Horizon and Lincoln Lab. No.

a1 14656

C to 3 inches. Light grayish brown (10YR 5.5/2.5 dry) to dark grayish brown (10YR 4/2 moist and crushed) silt loam; weak very fine granular structure; dry soft, moist very friable; strongly effervescent: clear smooth boundary.

AC 14657

3 to 15 inches. Pale brown (10YR 6/3 dry) to brown (10YR 4/3 moist) dark grayish brown (10YR 4/2 moist crushed) silt loam; very weak medium subangular blocky structure breaking to weak fine granular; dry slightly hard, moist very friable; violently effervescent; gradual smooth boundary.

c1 14658

15 to 42 inches. Pale brown (10YR 6.5/3 dry) to brown (10YR 5/3 moist and crushed) silt loam; very weak coarse subangular blocky to massive structure; dry soft, moist very friable; violently effervescent; clear amooth boundary.

C2

42 to 60 inches plus. Very pale brown (10YR 7/3 dry) to yellowish brown (10YR 5/4 moist and 5/3.5 moist crushed) silt loam; massive; dry soft, moist very friable; violently effervescent.

SCS-420 a U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE _____ SOIL Nos. #50Colo-50-5 LOCATION Provers County, Colorado SOIL Colby silt loss LAB. Nos. 14665-14669 Jamary 1966 Size class and particle diameter (mm) 180a Sand Coarse fragments Clay SAla int. II Medium Fine Very fine (0.5-0.25) (0.25-0.1) (0.1-0.05) (0.05-0.02) (0.02-0.002) 242 int. III (0,2–0.02) Ourton Non-Depth Horizon Silt 2 - 19 19 -76 Charles (In) (2-0.05)(0.05-0.002) (= 0.002) (1-0.5)ata (**Q19**) Pct. of ______ 76 mm ate 53.9 20.5 0.7a 1.6a 2.5a 6.1a 14.7a 38.7 15.2 56.7 18.3 23.4 0.7a 2.9a 1.7a 9.9a 10.1a 36.3 16.0 45.1 56.9 25.3 0.3a 0.9a 1.3a 4.6a 10.5a 35.9 21.0 49.6 62.8 27.1 0.1a 0.4a 0.7a 1.9a 7.0a 35.0 27.8 43.2 53.2 24.4 1.2a 2.5a 2.7a 6.2a 9.8a 32.9 20.3 46.3 Tr. ALL 2-7 28.3 18.2 23 Tr. 7.3 3.1 7-14 AC 17.8 3 Tr. 34-36 36-60 10.1 24 æ Tr. æ 22.1 Tr. ulk dens 6Ala 6Ele 4B3 4B1b 432 800a 4Ale AAID COLE 432 #CI 8сть 8¢la C/N Organic Nitragen Depti Carbon 30-cm Ar-30-ca 1/3-2-Bax15-Bax 1/3- Sat. carbon 1:10 Bar toPaste <u>B</u>ry Bar CaCO 3 9/ y Pct. Pct. **2/**00 **2/cc** g/cc Pct. Pet. in./1r 7.6 7.9 8.5 7.6 7.8 8.5 7.5 7.7 8.5 7.4 7.6 8.3 1.45 0.143 10 12 9.0 9.4 0.1A 9.7 0.13 0.119 11 0.071 11 0.080 12 1.40 0.024 24.1 20.4 19.8 1.48 0.020 19.7 19.4 14.6 1,31 39 1. 90 2-7 1.39 21 0.79 7.4 7.6 7.5 7.7 0.92 18 11.1 9.6 0.52 15 841 Water extract from saturated paste Extractable bases silina Cat. Emch. 8Ala 6Pla **691a** 600 Cap. SALE Electrical (In.) Ca co3 нсо3 C1 \$04 Ca Mg Nø ĸ onduction III OAS ity meq/100 g 0.7 2.4 0.4 1.5 0.9 1.2 0.9 2.5 Ē. 16.0 0.8 1.3 15.0 1.1 Tr. 0.7 0.5 17.6 1.5 د.ه. 8.0 14.9 J., 3 0.1 0.6 a. 5-27 carbonate.
b. 13 kg/m² to 36 inches.
c. Coefficient of Linear Extensibility. Ratios to Clay
SM. SM: SM.
SM: SM: SM. 84 512 Water Depth at **Сурсия** Par Œ **as**; monghemate clay. Wester 4 Pet Pet Pct 0.80 0.88 0.44 0.68 0.70 0.40 0.70 0.68 0.38 0.65 0.73 0.41 0.61 0.71 0.39 13.7 16.8 0-8 ٥ 2-7 7-1 • 19.8 ď.

Water Table: None. Stoniness: None. Salt or Albali: None.

Erosion: None. Present Use: Mative range. Described by: James P. Pannell, Ortober, 1960.

Horizon and Lincoln Lab. No.

0 to 2 inches. Light grayish brown (10YR 5.5/2 dry) to dark grayish brown (10YR 4/2 moist and crushed) silt lown; very weak very fine granular structure; dry soft, moist very friable; strongly effervescent; A11 14665 abrupt smooth boundary.

2 to 7 inches. Rale brown (10YR 5.5/3 dry) to brown (10YR 4/3 moist) dark grayish-brown (10YR 4/2 moist crushed) silt loss; weak medium subangular blocky structure breaking to weak fine granular; dry slightly hard, moist very friable; strongly effervescent; clear smooth boundary. A12 14666

7 to 14 inches. Fale brown (10YR 6/3 dry) to brown (10YR 4/3 moist end 4.5/3 moist crushed) silt loss;

SOIL Colby silt loam SOIL Nos. S60Colo-50-6 LOCATION Provers County, Colorado

SOIL SURVEY LABORATORY Lincoln, Rebraska LAB. Nos. 14670-14675 January 1966

		138	la .					Size	class and	particle dia	ameter (mm)	RAI					
			Total				Sand			S	itt	I		Clay	.3Ala	Coa	rse fragme	nts
Depth (in.)	Horizón	Sand (2-0.05)	Silt (0.05-	Clay (< 0.002)	Very coarse	Coarse (1-0.5)	Medium (0.5–0.25	Fine (0.25–0.1)	Very fine (0.1–0.05)	0.05-0.02	(0.02-	Int. II (0.2–0.02)	(2-0.1)	Osefbox	Non-	2A2 - 2	2 – 19	
		_	0.002)	ľ	(2-1)	<u> </u>	Pct. of <	l	ļ	l 	0.002)	1		ate	Carton	(<19) Pct.	Pct.	
0-1	All.	20.2	62.5	17.3	0.8a	1.8a	1.3b	3.6b	12.7	42.8	19.7	57.9	7.5	_	17	Tr.		
1-7	A12	9.8	61.2	29.0	0.28	0.4b	0.46	1.5b	7.3	37.8	23.4	46.2	2.5	5	24	The .		
7-14	AC	15.7	64.5	19.8	-	0.26	0.3b	2.16	13.11	46.1	18.4	60.9	2.6	. š	17	Tre.	L	
11-30	CI.	31.0	54.0	15.0	-		0.3b	6.6b	24.11	43.0			6.9	ĭ	14		Γ	
30-40	C22	12.2	65.9	21.9		0.1Ъ	0.26	1.6b		44.2			1.9	2	20	-		
40-60+	C3	38.4	44.1	17.5	1.6b	7.9b		12.86	8.75				29.7	2	16	Tr.		
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	6Ala	6Bla	1		6Ele	1		Bulk densi	T .	470	4B3	4B1b	432	4B2	4cı.	8спъ	8Cla	801
Depth (In.)	Organic Carbon	Nitrogen	C/N		Carbon- ate as		·	AAle 30-cm.	Air-	COLE	30-on.		2-mr	15-Bar		Set.	3.3	1:1
	<u>9</u> /				CaCO 3		l		Dry	₫/				Pet.	15-Baz	THE		
	Pct.	Pct.		-	Pet.		g/cc	g/cc	g/cc		Pct.	Pct.	Pct.	8.8	in/in.	77	7.9	8,4
0-1	0.96	0.03	10		<u> </u>	-			2 10	0.00	07.0	03.0	15.0	11.3	A 14	7.4	7.7	8.4
1-7	0.81	0.081	10		<u> 17</u>		ļ	1.38	1.48	0.024	21.8			8.5	0.14			8.5
7-14	0.44	O*O/15	10		8	-		1.32	ي 36 مد	0.014	23.1	17.7	14.6		0.12	7.6	7.8	8.7
JA-30	0.22	0.020	111		6						1	1		5.9	-	7.7	7.9	8.7
30- <u>1</u> 0	0.25		 	<u> </u>	8	_		 			├	-	<u> </u>	9.0	 	7.8	7.9	
ho-60+	0.23		 		8	 								7.2		7.9	8,1	8.7
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			ļ.,			<u> </u>								saturated				
		Extractab		5Bla_			Cat.		8	A7.	T :	Water	SKIFACE ITON	1 Saturateo	paste		-	
Depth . (in.)			6P2a	692a			C ₂	p. 5Ala	Cs	Mg	6Pla	601a		CO3	нсоз	C1	SO 4	8 Al Electrica conducti
()	Ca	Mg	Na	K				EH, OAS	-		"				, ,		4	ity
	-	1	I ma		meq/100 g	-		17 F	-		0.4	meq/I		r			_	mmho/c
0-1	 	+	Tr.	1.2	\vdash	 		17.4	\vdash	 	0.4	0.5	 	-	\vdash \dashv		\vdash	0.8
1-7	 	+	Tr.	0.8	 			18.3	 		0.5	0.2	 	 				0.7
7-14	-	 	0.1	0.6	<u> </u>		†	10.9	 	 	0.8				1		 	0.7
34-30 30-40	 	†	0.4	0.5		t	 	16.3			2.3	0.2	ļ	1				0.8
10-60+			0.6	0.4	-			18.4			4.3						-	1.0
								<u> </u>			ļ <u></u>							
-			<u> </u>								<u> </u>							
		<u> </u>			-	<u> </u>			<u> </u>	<u> </u>	<u> </u>	-	<u> </u>	<u> </u>				
Depth	8A Water at	532 Exchange- able		Gypsum	874	s to C 8B2 BB4OAc	810	a. b.	5-25%	carbon	ate. ate. 30 in		orga	nic met	ter.			
(In.)	Saturation	. Na	1		CORC	CORC	Bar T Age	ă.			of Ian		tensil	ility.				

Soil Type: Colby silt losm Soil Nos.: S50Colo-50-6

Logation: 0.2 mile north and 0.25 mile east of the southwest corner, Sec. 12, T268, RWTW, Provers County, Colorado.

Climate: Continental climate, average annual precipitation 13 to 15 inches, frost-free season 165 days.

Elevation: 4,000 feet.
Parent Material: Alluvium.

Physiographic Position: Street terrace. Relief: Hearly level 0-1 percent slopes.

Drainage: Good. Moisture: Dry. Water Table: Stoniness: None. Salt or Albali: None. Erosion: None.

Present Use: Native range.
Described by: James F. Pannell, October, 1960.

Horrizon and Lincoln

0 to 1 inch. Hight grayish brown (10YR 5.5/2 dry) to dark grayish brown (10YR 3.5/2 moist and crushed) A12 14670 loss; week fine platy structure breaking to weak very fine granular; dry soft, moist very friable; strongly effervescent; clear smooth boundary.

A12 14671 1 to 7 inches. Fals brown (10YR 5.5/3 dry) to dark brown (10YR 3.5/3 moist and 4/3 moist crushed) silt loss; moderate fine granular structure; dry slightly hard, moist very friable; strongly effervescent; clear smooth boundary.

7 to 14 inches. Pale brown (10YR 6/3 dry) to brown (10YR 4.5/3 moist and crushed) silt loam; weak medium subangular blocky structure breaking to weak fine granular; dry slightly hard, moist very friable; violently effervescent; gradual smooth boundary.

14 to 30 inches. Fale brown (10YR 6/3 dry) to brown (10YR 4.5/3 moist and crushed) silt losm; very weak A SHALL A

few small lime nodules; gradual smooth boundary.

30 to 40 inches. Pale brown (10YR 6/3 dry) to brown (10YR 4/3 moist and 4.5/3 moist crushed) silt loss; massive; dry slightly hard, moist very friable; violently effervescent; gradual smooth boundary. C2 14674

40 to 60 inches plus. Pale brown (10YR 6/3 dry) to brown (10YR 4.5/3 moist and 5/3 moist crushed) stratified silt loam, fine sandy loam and very fine sandy loam; massive; dry soft, moist very friable; violently C3 14675 effervescent.

SOIL	TYPE		ave: ''	كالللات	التحاب								
	SOIL					······································	LAB.	NOS.	2735	-2741			
Complete conservative	***************			***************************************		manuscriptus.			********	~ <u>#</u> ~	*************	· 14 14141 49 42 11 4 44	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
		_ 1.B1#	·		,		SUTION (i:	(p) (p)	r cent)	.3AI.		•	Ì.
DEPTH	HORIZON	COARSE SAND	COARSE SAND	MEDIUM SALD	FINE SAND	VERY FINE SAND	SILT	CLAY			> 2	TEXTUR. CLASS	AL
		2-1	1-0,5	J.5-0.25	2.25-0.10	0.10-0.05	0.05-0.002	< 0,002	0.2-0.02	002-0002		ļ	
4-0	Ao-Aoq	14.3	12.8	5.0	8.2	6.1	43.8	9.8	28.6	25.3		1	1
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Soil Type: Darling gravelly sandy loam Location: NW 1/4 of Sac. 8, T25, R76W; Grand County, Colorado. West St. Louis Creek.

Physiographic Position: Upland

Topography: Steeply sloping mountain side facing north.

Drainage: Well drained. Vegetation: Spruce - fir.

Use: Presently in National Forest Service lands.

Collected and Described by: John L. Retzer, September 5, 1952.

Lincoln Lab. No.

4 to 0 inch. Grayish brown (10YR 5/2 dry) to very dark gray (10YR 3/1 moist); a horizon of undecomposed and partially decayed forest litter made up of vaccinium roots, needles, twigs, and a few scattered leafy plants. The upper 1 inch is predominantly the undecomposed forest litter. Ao - Aoo 2735

0 to 4 inches. Light gray (10YR 7/2 dry) to grayish brown or light brownish gray (10YR 5.5/2 moist) gravelly loam; soft when dry, very friable when moist; weak to moderate fine platy structure breaking to moderate fine granules; extremely acid, approximate pH 4.2; lower boundary clear and smooth. A2 2736

4 to 14 inches. Brown (10YR 5/3 dry) to brown to dark brown (10YR 4/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure breaking to moderate very fine subangular blocks; extremely acid, approximate pH 4.2; lower boundary gradual and **B2** 2737 gmooth.

14 to 30 inches. Yellowish brown (10YR 5/4 dry) to dark yellowish brown (10YR 4/4 moist) gravelly B3 2738 sandy loam; slightly hard when dry, very friable when moist; massive or very weak medium subangular blocky structure; very strongly acid, approximate pH 4.8; lower boundary gradual and smooth.

Ç1 30 to 52 inches. Light brownish gray (2.5Y 6/2 dry) to grayish brown (2.5Y 5/2 moist) gravelly sandy 2739 loam; hard when dry, friable when moist; massive; strongly acid, approximate pH 5.3; lower boundary gradual and smooth.

52 to 74 inches. Light yellowish brown (2.5Y 6/4 dry) to light olive brown (2.5Y 5/3 moist) very 02 2740 gravelly sandy loam; loose when dry or moist; single grain; very strongly or strongly acid, approximate pH 5.0; this horizon is partially weathered bedrock.

Dr 2741 74 to 94 inches. Fractured gneiss and schist only slightly altered by weathering.

SOIL	SURVEY	LABORATOR	ΥΥ	Lincolu,	Nebr.	6/26/58	
COLL	TVDE D	n] in a	: ^^ A	TION	Crand	County	Coloredo

SOIL NOS.

LAB. NOS. 2742-2748

		lBla	,				UTION (in			341		1
DEPTH INCHES	HORIZON	SAND	COARSE SAND	SAND	SAND	VERY FINE SAND	SILT	CLAY	A A A A A		> 2	TEXTUR/ CLASS
		2-1	1-0.5	0.5-0.15	0. 75-0. 10	0.10-0.05	0.05-0.902	< 0.002	9, 2-0.02	003-0003		<u> </u>
0-3 3-23 23-38 38-48	B2 C1 C2	8.8 12.2 33.7 39.6 14.8	: -	6.6 6.5 10.1	6.7 13.7 9.4 8.4 20.2 14.3	5.3 8.8 5.0 4.3 11.7 7.2	52.1 30.0 17.4 15.9 22.4 16.4		29.1 17.0 14.6 33.8	9.6		sil cosl cosl lcos cosl
welste (100 Mat 1 + 1 + 1) !		ORGA	NIC MA	TTER	***********	************	***********	***********	*************	***************************************	
8Cla		******	6Ala	6Bla								
1:3	1;5	1:10	ORGANIC CARBON	NITRO-	C/N							
4.7 4.8 5.2 5.5 5.8 5.9			3.83 1.35 1.00 0.47 0.31 0.27	.154 .062 .043	22							Address - despite the state of
5ALB CATION EXCHANGE EAPACITY NHLLAC	6N2h	602ъ Мо	TABLE 6Hla H	6 P2a No	602a K	BASE SAT. NHI AC EXCH.	Basa Sat. % on Sum Cations 5C3	5Bla Sum Bases me/100g			8103 Ce/Mg	
28.9 20.6 13.1	5.2 6.9 5.0	2.6 1.2 0.6	19.3 14.1 10.6	0.1 0.1 0.1	0.4	30 42 46	31 38 36	8.8 8.6 6.0	28.1 22.7 16.6		2.0 5.8	
10.3 14.4 13.9	4.3 10.0 10.6	0.6 1.4 1.3	6.8 3.7 3.9	0.1	0.3	50 82 88	43 76 76	5.2 11.8 12.3	12.0 15.5 16.2		7.1 8.2	
• •	Martin Balland - Francisco de Carlo de											

Soil Type: Darling gravelly sandy loam Location: NW 1/4 of Sec. 8, T2S, R76W, Grand County, Colorado. West St. Louis Creek.

Physiographic Position: Upland steep mountain slope.

Topography: Steeply sloping area of approximately 35 percent gradient facing north.

Drainage: Well drained. Vegetation: Spruce - fir.

Use: National Forest Service land.

Collected and Described by: John L. Retzer, September 8, 1955.

Horizon and Lincoln Lab. No.

Ao - Aoo 4 to 0 inch. Dark-colored organic mat made up of undecomposed and partially decomposed forest litter, 2742 primarily vaccinium roots, needles, bark, and twigs.

O to 3 inches. Light brownish gray (10YR 6/2 dry) to grayish brown (10YR 5/2 moist) gravelly loam; soft when dry, very friable when moist; weak to moderate medium platy structure; extremely acid, approximate pH 4.4; lower boundary abrupt and smooth. A2 2743

3 to 23 inches. Brown (7.5YR 5/4 dry) to brown to dark brown (7.5YR 4/4 moist) very gravelly sandy loam; loose when dry and moist; single grained; very strongly acid, approximate pH 4.7; approximately 182 2744 75 percent of this horizon is gravel; lower boundary gradual and smooth.

23 to 38 inches. Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) gravelly sandy loam; very hard when dry, firm when moist; massive; strongly acid, approximate pH 5.2; this horizon is weakly cemented in some places, but the degree of cementation is not great and is variable from place to place; lower 2745 boundary gradual and smooth.

C1 2746 38 to 48 inches. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) very gravelly sandy loam; slightly hard when dry, very friable when moist; massive; strongly acid, approximate pH 5.5; lower boundary diffuse and smooth.

48 to 81 inches. Light olive brown (2.57 5/3 dry) to olive brown (2.57 4/3 moist) partially weathered gneiss and schist bedrock. Approximately 70 percent of the horizon is coarse stones and boulders with 2747 the remainder of the horizon being a very gravelly sandy loam occurring between the boulders. Lower boundary diffuse and smooth.

81 to 116 inches plus. Light olive brown (2.5975/3) dry to olive brown (2.5984/3) moist unweathered fresh gneiss and schist bedrock. 2748

SOIL SURVEY	LABORATORY	Lincoln, Nebr.	6/	26/58		
SOIL TYPE	Darling LOCA gravelly sandy loam	TION	Grand	County,	Colorado	••
SOIL NOS.	44,746,	LAB. NOS	279	1-2794		****

. 0000110179,000 7 1500061	040c818549es mendah						UTION (in			747	******************************	·
DEPTH INCHES	HORIZON	VEDV	CDARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND 0.10-0.05	SILT	CLAY		341.	> 2	TEXTURA CLASS
6-21 21-34	Ac& A2 B2 B3 C	49.7 28.4	15.9 13.5 14.1	3.4 5.3	4.9 10.1	5.1	16.0 27.2 27.2	5.0	14.4 34.6 41.8	9.6 12.6		lcos cosl cosl
8 Cla .	еН 1:5	1:1¢		NIC MA 6Bla NITRO- GEN	TTER C/N	Pad 141.00 1.41 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	gopanga independentance ,	*************	\$00,001,000,400,000	7246 Base 644 e 1844 e		00 170: 3tom (assess)
4.9 5.0 5.3		* * * ·	0.62 0.60 0.21	.015 .031								**************************************
5ALB CATION EXCHANGE CAPACITY NELLAC		EXTRAC	TABLE (6HLa H	CATIONS 6P2a No	5Bla 6Q2a K	BASE SAT. NELLAC EXTH.	Base Sat. %	Bases	Sum	s	8 D3 Ca/Mg	******************************
10.9 11.8 16.2	5.1 0.6 4.6		11.3 12.2 9.1	0.1 0.1 0.1	0.1 0.1 0.2	64 ද 33	38 8 40	7.0 1.0 6.1	18.3 13.2 15.2		3.0 3.8	
1												

Soil Type: Darling gravelly sandy loam
Location: SW 1/4 of Sec. 10, T2S, R76W, Grand County, Colorado, along Road 9, Fool Creek Watershed.
Hysiographic Position: Upland.

Topography: Steeply sloping slightly concave mountain slope, facing north. Drainage: Well or moderately well drained.

Vegetation: Spruce and fir.

Use: National Forest Service land.

Collected and Described by: John L. Retzer, October 3, 1952.

Horizon and Lincoln Lab. No.

O to 6 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) gravelly Ao & A2 sandy loam; soft when dry, very friable when moist; weak to moderate fine granular structure; extremely acid, approximate pH 4.2; this horizon appears to be a mixture of Ao and A2. At the site sampled, 2791 portions of the pit indicated a weak A2 in the lower inch while other portions seemed to indicate that the A2 had been mixed throughout the entire horizon since small fragments of mineral matter approximately 10YR 7/2 dry and 10YR 5/2 moist occurred heterogeneously throughout the mass.

6 to 21 inches. Brown (7.5YR 5/3 dry) to brown or dark brown (7.5YR 4/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; weak to moderate subangular blocky structure; strongly acid, approximate pH 5.1; lower boundary gradual and smooth. B2 2792

21 to 34 inches. Light yellowish brown (10YR 6/4 dry) to dark yellowish brown (10YR 4/4 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; massive; strongly acid, approximate pH 5.2; lower boundary gradual and smooth. В3 2793

C 2794 34 to 47 inches. Light yellowish brown (2.5Y 6/4 dry) to light olive brown (2.5Y 5/4 moist) gravelly sandy loam; very hard when dry, very firm when moist; massive; strongly acid, approximate pH 5.5; 80 to 90 percent of this horizon is gravel and rock, and the horizon appears to be weakly cemented; lower boundary is diffuse and smooth.

n 47 to 55 inches. Partially weathered gneiss and schist bedrocks.

Remarks: This profile is thought to be a Darling soil occurring in a slightly concave area where it has received some mixture and truncation, so that the distinct A2 of the Darling soils occurs indefinitely or may be absent entirely. These areas in the Fraser Unit were of small acreage and were combined as an inclusion in the Darling series. It is possible that soils of this character will need series status if they are found to occur frequently and in large areas.

SOIL	SURVE	Y LABORA	ATORY	Lincoln,	Nebr.	6/26/58	
SOIL	TYPE	Darling gravelly san	dy loam	TION	Gran	i County, C	olorado
S 0]	EL NOS.	######################################		"LAB.	NOS	2795-2799)

		1 B Lø	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	PARTI	CLE-SIZ	E DISTRIB	UTION (in	та.) (р е	r cent)	"3A1" "	****************	/fa nce/fi tadolandia .÷
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			> 2	TEXTURA CLASS
		2-1	1-0.5	0.5-6.25	0.25-0,10	0.10-0.05	0.05-C.002	< 0.002	0.2-0.02	0.02-0.002		: L
3-0 0-10	A00 A08-A2	9.4	6.6	3.8	9.0	10.9	41.5	18.8	34.5	23.5		1
1.0-22		18.8	11.0	6.0	12.1	13.5	32.2	6.4	37.5	15.6		cosl
	B3		12.7		11.8	11.5		6.5	34.3	12.1		cosl
42-54	Cl	38. 0	17.4	7.9	10.5	7.0	14.0	5.2	20.4	6.2		lcos
	рH			NIC MA	TTER	T2274488 198944489-79)+1	880-200888444845422429		16 171334 3 4813444	***************	*********	} } !
8Cle	1:5	1:10	6ALA ORGANIC CARBON	NITRO-	C/N							
1,1		****	75	78								
4.9			7.22									
5.6 5.8			0.54									
5.9			0.23									
#70 000 \$# 100 ##20 1 \$	6 4554554 8 666887747	***********		140 8 4 1404304 SEC+44 SFF	19744184-94949	2016454244444444	Présiden Education , respet	*** **********) p. 1 - 2001 0 (() 1 1 1 1 1 1 1 1 1 1	1.00-2-740-0-0-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7	6\$4\${\$14005104 0 \$	*************
5Ala	,		TABLE			BASE SAT.	Base	581a			803	
CATION XCHANGE APACITY NHLAC	6M2b C+	Mg	6H1.a. H alents per	No	6 9,2a K	NH _L AC	ations	Sum Bases	Cation		Ca/Mg	-
				1009. 301.			_ <i>5</i> Ç31	ne∖ T ∩ ∩ B	meAnod	g		
35.9	17.0	4.7		0.1	0.4	62	1414		50.6		3.6	İ
11.1	6.7	1.5		0.1	0.1	76 27	65 59		13.0 10.7		4.5 4.1	ļ
8.2 7.3	4.9 4.3	1.2	2.8		0.1 0.1	77 78	67	5.7			3.6	
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			4 3	:			:					4

Soil Type: Darling gravelly sandy loam Location: SW 1/4 of Sec. 10, TPS, R76W, Grand County, Colorado, along Road 9, Fool Creek Watershed.

Physiographic Position: Upland.

Topography: Steeply sloping slightly concave mountain side, facing north.

Drainage: Moderately or well drained. Vegetation: Spruce and fir.

Use: National Forest Service land.

Collected and Described by: John L. Retzer, October 3, 1952.

Lincoln Lab. No.

A forest mat of undecomposed moss, vaccinium, needles, bark and twigs. 3 to 0 inch.

2795

O to 10 inches. Dark gray (10YR 4/1 dry) to very dark gray (10YR 3/1 moist) gravelly losm; soft when dry, very friable when moist; moderate fine granular structure; very strongly acid, approximate pH 5.0; this horizon appears to be a mixture of Ao and A2. In places a thin A2 horizon in (10YR 7/2 dry) and (10YR 5/2 moist) occurs intermittently in the lower 2 inches of the horizon described. In other Ao & A2 2796 areas flecks and nodules of A2-like material (10YR 7/2 dry) and (10YR 5/2 moist) occur throughout the entire borizon.

10 to 22 inches. Brown (7.5YR 5/4 dry) to brown or dark brown (7.5YR 4/4 moist) gravelly loam; slightly 2797 hard when dry, very friable when moist; weak medium subangular blocky structure; medium acid, approximate pH 5.6; lower boundary gradual and smooth.

22 to 42 inches. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) gravelly 2798 sandy loam; slightly hard when dry, very friable when moist; massive; medium acid, approximate pH 5.8; lower boundary gradual and smooth.

42 to 54 inches. Light yellowish brown (2.5Y 6/3 dry) to olive brown (2.5Y 4/4 moist) gravelly sandy loam; hard when dry, firm when moist; massive; medium acid, approximate pH 5.8; lower boundary gradual 2799 and smooth.

 C_2 54 to 57 inches. This is a stratified layer and contains a large amount of coarse gravel and rock.

57 inches plus. Light brownish gray (2.5Y 6/2 dry) to grayish brown (2.5Y 5/2 moist) partially weathered מ gneiss and schist bedrock.

SOIL Deertrail silt loam SOIL Nos S61Colo-3-4 LOCATION Arapahoe County, Colorado
SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 15508-15516 February 1965

	Ì	1Bla	Total		· · · · ·		Sand	Size	class and	particle di	ameter (mm) <u>3A1</u>		BALA C	ílev-	Con	erse fragme	ents 2/
Depth	Horizon	Sand	Silt	Clay	Very	Coerse	Medium	Fine	Very fine		Int. III	Int. II (0.2–0.02)	ì		Noncer		2 - 19	T
(in.)		(2-0.05)	(0.05 0.002)	(= 0.002)	(2-1)	(1-0.5)	ı	l	(0.1-0,05)	0.05-0.02	(0.02 0.002)	ľ	(2-0.1)		ponate		. Pct	. of 6 mm
0-2	A2	14.4	54.5	31.1		0.2ъ	Pct. of -<	2 mm — 1.8	12.2	33.0	21.5	46.5	2.2	_	31	Tr.	/	mm.
2-9	B2t	10.7	49.1 49.6	פ.חול	! -	0.15	0.1	1.5 1.0	9.0	33.0 26.6 27.8	22.5 21.8	36.7 38.4	1:7	\	40 38	Tr.	1	
9-12 12-23	B2ca B3lca	11.0	54.9	39.3 34.1		0.1b	0.1 0.1c		10.0c	30.5	24.4	41.1	1.0	1 4	30	Tr.	 	-
23-32 32-44	B32ca C1	11.5 12.9	58.1 61.1	30.4 26.0	-	0.1d 0.1d	0.1d 0.1d		10.4e	33.2 36.0	24.9 25.1	44.3 48.5	1.1	5	25	Tr.	ļ	
44-55	C2	13.2	60.3	26.5	=	0.1d	0.24	0.9e	12.0e	34.4	25.9	47.1	1.2	3	23 22	 	 	\vdash
55-69 a	C3cs	14.2	62.0 47.1	23.8 41.2	-	0.1d 0.1	0.1d 0.1	1.6e	12.4e 9.8	34.6 28.7	27.4 18.4	48.2 39.8	1.8	Tr.	24 41	Tr.		
							\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		- J.U	.40.	100	1210			7.			<u> </u>
	6Ala	6Bla			6Ele	601a		Bulk densit	y 4Alb	4111	43B3	ater conte	it 14B2		4D1		рĦ	<u> </u>
Depth (In.)	Organic carbon	Nitrogen	C/N	,	Carbon- ate as	Ext. Iron		30-Cm.		JOLE	BO-Cm.		15-Bar		15-Bar Water		801a	8c
(m.,					CaCO 3	as Fe			Dry	_					to Clay	Paste	1:10	(1:
0-2	1.28	0.105	12		Pct.	Pet.	g/cc	E/CC	g/cc		Pct.	Pct.	Pct. 12.2		0.39	6.3	6.9	6.
2-9 9-12	0.69 0.60	0.071	1.0		Tr.	0.8		1.32	1.58	0.39	32.9	1	15.6		0.39	6.7	7.3 8.5	6. 7. 8.
12-23	0.30	0.038	10		11	0.6	— —		1.59			ļ —	15.6 14.2		0.40	8.1	9.0	8.
23-32 32-44	0.18	0.025			10 7	0.6	Ì						13.2 12.1		0.43	7.9 7.7	8.9 8.8	8.
44-55	0.17				6	0.6			1.42				12.4		0.47	7.8	8.9	8.
55-69 <u>a</u>	0.17 1.06		ļ		5	0.7		·					12.2 16.0		0.51	7.6	8.1	7.
		Eutrootob	e bases 5	71.0		6Hla	Cat.	Exch.	Cap.			Water	wheat from	esturated	paste SA		<u></u>	<u> </u>
	6N2b	602b	6P2a	602a		0,111	5A3a	5Ala	5A2a	6NLa	60 1.a	6Pla	601.a		6Ла	6Kla	61Ла	8A1
Depth (in.)	Ca	Mg	Na	ĸ	Sum	Ext. Acidity	Sum Cations	NH ₁₄ OAc	Nea OAc	Ça.	Mg	-Me.	ĸ	co3	нсо3	Cì	so ₄	Electri conductity
	12.0	1 E 7	0.1	1 3	meq/100 g	3.8	22.9	19.7	20.4	=		meg/1	0.4	_	===			mmhe O.
0-8	15.5	5.7 9.2	0.3	1.3	26.4	2.9	29.3	25.6	26.0		}	0.9	0.3		1		İ	0.5
9-12 12-23	ļ	 	2.2	0.9		<u> </u>		25.4	106 7				0 2	i			j	0.
23-30									26.3			2.0	0.3					0.4
-3-3-1	}			1.0				22.3 21.3	23.7 22.3	3.4	2.0	12.7	0.1	_	4.0	_	17.6	1.9
23-32 32-44 44-55		<u> </u>	3.0 4.4					22.3	23.7	14.7 12.7	2.0 11.3 9.4	4.4 12.7 34.9	0.1 0.3 0.7		4.0 4.6 6.8	1.7	17.6 64.9 67.1	1.9
44-55 55-69	12.0	R 2	3.0 4.4 5.8 5.1	1.0 1.1 1.2 1.1	ત્રો તેલ	5.0	20 Ji	22.3 21.3 20.8 21.4 21.5	23.7 22.6 21.6 22.4	14.7	11.3	12.7	0.1		6.8		17.6 64.9 67.1 80.0	1.9 4.9
44-55	13.0	8.3	3.0 4.4 5.8	1.0 1.1 1.2	5ħ°#	5.0	29.4	22.3 21.3 20.8 21.4	23.7 22.3 21.6 22.2	14.7 12.7	11.3 9.4	4.4 12.7 34.9	0.1 0.3 0.7		6.8	1.7	67.1	1.9
44-55 55-69	8A	5D1	3.0 4.4 5.8 5.1 1.7	1.0 1.1 1.2 1.1 1.4	8D1.	Base	Set.	22.3 21.3 20.8 21.4 21.5 25.3	23.7 22.3 21.6 22.2 22.4 26.6	14.7 12.7 24.5	11.3 9.4 14.7	4.4 12.7 34.9 10.5 46.8	0.1 0.3 0.7 0.8	-	4.6 6.8 5.8	1.7 10.8	67.1 80.0	1. 4.
44-55 55-69 <u>8</u> Depth	8A Water	5D1, Exchange-	3.0 4.4 5.8 5.1 1.7 5E Sodium	1.0 1.1 1.2 1.1 1.4	SDI. NH _I OAc CEC	Base 503		22.3 21.3 20.8 21.4 21.5 25.3	23.7 22.3 21.6 22.2 22.4 26.6 Upper > 50% 5-25%	14.7 12.7 24.5 inch corganicarbon	11.3 9.4 14.7 of B2 h c matt	4.4 12.7 34.9 10.5 46.8	0.1 0.3 0.7 0.8	-	4.6 6.8 5.8	1.7 10.8	67.1 80.0	1. 4.
44-55 55-69	8A Water at Saturation	5D1. Exchange- able Na Na Na OAc	3.0 4.4 5.8 5.1 1.7 5E Sodium	1.0 1.1 1.2 1.1 1.4	8D1 NH, OAd CEC to Clay	Base	Set. 501	22.3 21.3 20.8 21.4 21.5 25.3	23.7 22.3 21.6 22.2 22.4 26.6 Upper > 50% 5-25% 25-50%	14.7 12.7 24.5 inch corganicarbon mica-	11.3 9.4 14.7 of B2 h c matt	4.4 12.7 34.9 46.8 46.8 aving	0.1 0.3 0.7 0.7 0.8	- - ce char	4.6 6.8 5.8	1.7 10.8	67.1 80.0	1. 4.
44-55 55-69 8 Depth	8A Water at Saturation	5D1, Exchange-	3.0 4.4 5.8 5.1 1.7 5E Sodium Adsorption	1.0 1.1 1.2 1.1 1.4	8D1 NH ₁ OAd CEC to Clay Ratio	Base 503 Sum Cation	Set. 501 WHi,OAc	22.3 21.3 20.8 21.4 21.5 25.3	23.7 22.3 21.6 22.2 22.4 26.6 Upper > 50% 5-25% 25-50% 5-25%	14.7 12.7 24.5 inch corganicarbon mica-	11.3 9.4 14.7 of B2 h c matt	4.4 12.7 34.9 46.8 46.8 eving	0.1 0.3 0.7 0.7 0.8 A2-11k	e char	4.6 6.8 5.8	1.7 10.8	67.1 80.0	1.9 4.9
0-2 2-9	8A Water at Saturation Pct. 52.5 56.5	5D1, Exchange- able Na Na OAC CEC Pct.	3.0 4.4 5.8 5.1 1.7 5E Sodium Adsorption	1.0 1.1 1.2 1.1 1.4	8D1 NH ₁ OAc CEC to Clay Ratio 0.63 0.64	Base 503 Sum Cations	Set. 501	22.3 21.3 20.8 21.4 21.5 25.3	23.7 22.3 21.6 22.2 22.4 26.6 Upper > 50% 5-25% 25-50% 5-25%	14.7 12.7 24.5 inch corganicarbon mica-	11.3 9.4 14.7 of B2 h c matt sate. like.	4.4 12.7 34.9 46.8 46.8 eving	0.1 0.3 0.7 0.7 0.8 A2-11k	e char	4.6 6.8 5.8	1.7 10.8	67.1 80.0	1. 4.
0-2 2-9 9-12	8A Water at Saturation Pet. 52.5 56.5 65.5	5D1, Exchange- able Na Na OAC CEC Pct,	3.0 4.4 5.8 5.1 1.7 5E Sodium Adsorption	1.0 1.1 1.2 1.1 1.4	8D1 NH ₁ OAc CEC to Clay Ratio 0.63 0.64 0.65	Base 503 Sum Cations	Set. 501 NHLOAC	22.3 21.3 20.8 21.4 21.5 25.3	23.7 22.3 21.6 22.2 22.4 26.6 Upper > 50% 5-25% 25-50% 5-25%	14.7 12.7 24.5 inch corganicarbon mica-	11.3 9.4 14.7 of B2 h c matt sate. like.	4.4 12.7 34.9 46.8 46.8 eving	0.1 0.3 0.7 0.7 0.8 A2-11k	e char	4.6 6.8 5.8	1.7 10.8	67.1 80.0	1. 4.
Depth (In.) 0-2 9-72 12-23 23-32	8A Water at Saturation Pct. 52.5 56.5 65.5 59.8 45.7	5D1 Exchange- able Na OAC CEC Pet, 1 2 8	3.0 4.4 5.8 5.1 1.7 5E Sodium Adsorption Ratio	1.0 1.1 1.2 1.1 1.4 6F1a Gypsum	8D1 NH, OAc CEC to Clay Ratio 0.63 0.64 0.65 0.65	Base 503 Sum Cations	Set. 501 NHLOAC	22.3 21.3 20.8 21.4 21.5 25.3	23.7 22.3 21.6 22.2 22.4 26.6 Upper > 50% 5-25% 25-50% 5-25%	14.7 12.7 24.5 inch corganicarbon mica-	11.3 9.4 14.7 of B2 h c matt sate. like.	4.4 12.7 34.9 46.8 46.8 eving	0.1 0.3 0.7 0.7 0.8 A2-11k	e char	4.6 6.8 5.8	1.7 10.8	67.1 80.0	1. 4.
Depth (In.) 0-2 9-72 12-23 32-34	8A Water at Saturation Pct. 52.5 56.5 65.5 59.8 45.7 44.7	5D1 Exchange- able Na OAC CEC Pct, 1 2	3.0 4.4 5.8 5.1 1.7 5E Sodium Adsorption Ratio	1.0 1.1 1.2 1.1 1.4	8DI NH ₄ OAc CEC to Clay Ratio 0.63 0.64 0.65	Base 503 Sum Cations	Set. 501 NHLOAC	22.3 21.3 20.8 21.4 21.5 25.3	23.7 22.3 21.6 22.2 22.4 26.6 Upper > 50% 5-25% 25-50% 5-25%	14.7 12.7 24.5 inch corganicarbon mica-	11.3 9.4 14.7 of B2 h c matt sate. like.	4.4 12.7 34.9 46.8 46.8 eving	0.1 0.3 0.7 0.7 0.8 A2-11k	e char	4.6 6.8 5.8	1.7 10.8	67.1 80.0	1. 4.
Depth (In.) 0-2 2-9 9-72 12-23 23-32	8A Water at Saturation Pet. 52.5 56.5 59.8 45.7 44.7	5D1 Exchange-able Na OAC C2C Pct.	3.0 4.4 5.8 5.1 1.7 5E Sodium Adsorption Ratio	1.0 1.1 1.2 1.1 1.4 6F1A Gypsum	8D1 NH ₄ OAc CEC to Clay Ratio 0.63 0.64 0.65 0.65 0.70	Base 503 Sum Cations	Set. 501 NHLOAC	22.3 21.3 20.8 21.4 21.5 25.3	23.7 22.3 21.6 22.2 22.4 26.6 Upper > 50% 5-25% 25-50% 5-25%	14.7 12.7 24.5 inch corganicarbon mica-	11.3 9.4 14.7 of B2 h c matt sate. like.	4.4 12.7 34.9 46.8 46.8 eving	0.1 0.3 0.7 0.7 0.8 A2-11k	e char	4.6 6.8 5.8	1.7 10.8	67.1 80.0	1. 4.

Soil Type: "Deartrail silt loam Soil Nos.: 8610010-3-4

Classification: Brown.

Location: 521 feet east, 252 feet north of the southwest corner of Sec. 23, T58, R59W, Arapahoe County, Colorado. Climate: Continental, average annual precipitation la inches. Mean annual temperature 49° F.

Frost-free period 150 days. Elevation 5,400 feet.

Vegetation: Mative pasture. Barren. Buffalograss and western wheatgrass on the edge. Associated with Weld silt loss growing blue green and pricklypear.

Parent material: Asolian silty material - losss. Physiographic position: Upland.

Relief: Small degression, about 10 feet in diameter, and 4 inches lower than surrounding ground. Overall slope is nearly level, I percent facing north and east.

Brainage: Slow surface drainage. Water will stand in these spots a day or more. Medium to slow internal drainage in B2, medium in other horizons. Slow intake rate.

Moisture: Moist to 14 inches, dry below. Usually dry. Water table: None. Stominess: None. Salt or alkali: Typical for E3ca to have a pH of over 8.5, but pH of 7.5 or lower in A2 and E2. Calcium carbonate present below B2 horizon.

Erosion: Slight wind. May be removal or deposition. Described by: J. B. Brown, June 27, 1961.

I4ncoln Lab. Nos.

15508

15514

C3cs

0 to 2 inches. Dark grayish brown (10YR 4/2, moist) heavy silt losm; light brownish gray (10YR 6/2, dry) strong fine granular structure; soft when dry, very friable when moist; texture grades from silt loam to silt name the hottom 1/k to a inch of this horizon has strong, very fine platy structure;

2 to 9 inches. Bark brown (10YR 3.5/3, moist) clay; dark brown (10YR 4/3, dry) dark brown (10YR 4/3, moist and crushed); moderate medium prisms breaking to strong fine angular blocks; very hard when dry, BΩt 15509 very firm when moist; thin nearly continuous clay skins on all ped surfaces; columns are coated with fine bleached sand grains; roots are plentiful in this horizon, with as many penetrating the peds as following the structural faces; top two inches of this horizon has a little darker staining on the outside of the peds than the lower part of the horizon; abrupt slightly wavy boundary. 9 to 12 inches. Brown (10YR 4.5/3, moist) silty clay; pale brown (10YR 6/3, dry) moderate medium prisms 15510 breaking to moderate fine angular blocks; hard when dry, firm when moist; thin patchy clay films on all ped faces; roots and root channels are numerous in this horizon; strong effervescence; clear smooth boundary. 12 to 23 inches. Brown (10YR 5/3, moist) silty clay losm; pale brown (10YR 6.5/3, dry) moderate medium B3lca prisms breaking to moderate fine angular and subangular blocks; hard when dry, firm when moist; thin 15511 patchy clay films on ped surfaces; roots are numerous with many fine pores one millimeter in dismeter; lime concretions are common medium and faint; violent effervescence; clear smooth boundary. 23 to 32 inches. Brown (10YR 5/3, moist) light silty clay losm; pale brown (10YR 5/3, dry) weak medium prisms breaking to weak to moderate medium subangular blocks; slightly hard when dry, friable when moist; thin patchy clay films on some ped faces; lime concretions are few medium and faint; some roots and many small pores less than one millimeter in diameter; violent effervescence; gradual smooth boundary. B32ca 15512 32 to 44 inches. Brown (low 5/3, moist) silt loam; pale brown (low 6/3, dry) weak coarse primmatic to massive structure; soft when dry, very friable when moist; few roots with many small holes less than one millimeter in diameter; violent exercescence; arbitrary boundary. 15513 44 to 55 inches. Brown (10YR 5/3, moist) silt loam; pale brown (10YR 6/3, dry) weak coarse prismatic

to massive structure; soft when dry, very friable when moist; very few roots but pores continue; violent effervescence; clear slightly wavy boundary.

55 to 69 inches. Brown (10YR 5.5/3, moist) silt loam; pale brown (10YR 6.5/3, dry) massive structure;

L SURVEY	/ LABORATO	RY Line	oln, I	wenrask	·						LAB. Nos.	<u> 1552'</u>	<u>5-1553</u>	2		F	bruary 1	<u>96</u> 5
		1Bla						\$	ze class and	particle d	ameter (mm) 3A1.						\neg
	}		Total	,I			Sand		τ		ilt			3Ala (Coarse	fragments 2	12
Depth	Horizon	Sand	Sitt	Clay	Very	Coarse	Medium	Fine	Very fine	<u> </u>	Int, III	Int. 11 (0.2-0.02)	(2-0.1)	Sa Hrm	Norman.	>- 2	2 19. 19 - 7	·6
17																		
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Soil Type: *Deertrail silt loam

Soil Nos.: 961Colo-3-6 Classification: Brown

Location: 144 feet west, 303 feet south of the northeast corner of Sec. 16, T48, R59W, Arapahoe County, Colorado.

Climate: Continental, average annual precipitation 14 inches. Mean annual temperature 49°

Frost-free period 150 days. Elevation 5,100 feet.

Vegetation: Native pasture. Buffalograss associated with blue grams, western wheatgrass and pricklypear.

Parent material: Acolian silty material. Physiographic position: Upland.

Relief: Small depression about 7 feet in diameter, and 4 inches lower than surrounding area. Over-all slope is nearly level, I percent facing northeast.

Drainage: Surface drainage slow to none. Water will stand in these spots a day or more. Slow to medium internal

in the E2, medium in other horizons. Slow intake rate.

Moisture: Moist to 12 inches. Dry below. Usually dry. Water table: None. Stoniness: None.

Salt or alkali: Typical for B3ca to have a pH of over 8.5, with pH of 7.5 or lower in A2 and E2. Calcium carbonate present below B2 horizon.

Slight wind. May be removal or deposition. Described by: J. B. Brown, June 28, 1961, Frosion:

Bortzon and Lincoln Lab. No.

15525

0 to 3 inches. Dark grayish brown (10YR 4/2, moist) heavy silt loam; light brownish gray (10YR 6/2, dry) strong very fine granular structure; soft when dry, very friable when moist; this horizon grades from a silt loam to a silty clay loam; the botton 1/4 to 1/2 inch has strong very fine platy structure coating the tops of the columns of the E2; field pH 6.8; boundary abrupt and smooth.

R2t 15526 3 to 10 inches. Dark brown (10YR 3.5/3, moist) clay; dark brown (10YR 4/3, dry, moist and crushed) moderate medium columns breaking to strong fine angular blocks; very hard when dry, very firm when moist; thin continuous clay films on ped surfaces: top 2 inches have darker staining on outside of peds: columns f

are coated with bleached fine sand grains; roots are numerous and readily penetrate the peds; field pH 7.6; abrupt slightly wavy boundary.

R2ca 15527 10 to 13 inches. Brown (10YR 4.5/3, moist) silty clay; brown (10YR 5/3, dry) moderate medium prisms breaking to moderate to strong fine angular blocks; hard when dry, firm when moist; thin patchy clay skins on all peds; many roots readily penetrate the peds; strong effervescence; with field pH of 8.6; clear smooth boundary.

B31ca 15528 13 to 20 inches. Light clive brown (1Y 5/3, moist) alty clay loam; light yellowish brown (1Y 6/3, dry) moderate medium prisms breaking to moderate medium subangular and angular blocks; hard when dry, friable when moist; thin patchy clay films on vertical faces; many roots readily penetrate peds; small holes less than one millimeter in diameter are common; lime concretions are common medium and faint; violent effervescence; field pH 9.0; gradual smooth boundary.

B32ca 15529 20 to 29 inches. Light clive brown (1Y 5/3, moist) light silty clay loam; light yellowish brown (1Y 6/3, dry) weak medium prismatic breaking to weak medium subangular blocks; hard when dry, friable when one millimeter in diameter; lime concretions are few medium and faint; violent effervescence; gradual

15530

29 to 40 inches. Light clive brown (1Y 5/3, moist) heavy silt leam; light yellowish brown (1Y 6/3, dry) mak coarse prismatic structure; slightly hard when dry, friable when moist; some roots and many small holes less than one millimeter in diameter; some lime mycelia; violent effervescence; diffuse boundary.

15531

40 to 55 inches. Light olive brown (1Y 5/3, moist) silt loam; light yellowish brown (1Y 6/3, dry) massive; soft when dry, very friable when moist; very few roots, but many holes less than one millimeter in diameter; violent effervescence; arbitrary boundary.

55 to 68 inches. Hight olive brown (1Y 5/3, moist) silty loam; light yellowish brown (1Y 6/3, dry) massive; soft when dry, very friable when moist; no roots, but small holes continue; violent effervescence. 15532

Remarks: This soil is associated with the Weld series and grades from this to the Weld. These spots are usually small, less than 100 feet in diameter. They are common on slopes of 0 to 3 percent and are found at the heads of drainages on slopes of 3 to 5 percent. Where cultivated, the crops are lower in height and lower in yields where these spots have been. They will show as slicked-over areas in cultivated fields. They seldom cover more than 30 percent of the area, with yields being 5 to 20 percent less where these spots are present, as compared to the Weld series alone. Columns in the E2 often lean 10 to 30 degrees, but none have been found that are horizontal. They may lean in any direction.

Bureau of Public Roads Samples: B2, 3-10 inches; B32cs, 20-29 inches; C2, 40-55 inches.

		E	CHANGE CAPACITY	OF NONCLAY			
		Salt (50-4μ)	Sand		Total	
Identific	ation		Per		Per		
		me./100 g.	100 g./<2-mma.	me./100 g.	100 g./<2-mm.	me./100 g.	
15526	150	7.2	3.1	2.1	0.3	3.4	
15531	(2)	4.0	9.5	և.7	n.Ř	3 3	

Observations of fabric with stereoscopic microscope: E2 has very weak coatings on planar surfaces. A few clay films associated with pores of ped interiors. Slightly denser and shinier planar surfaces than B2 of 3-4. Strucutre weaker than B2 of Weld.

Micromorphology (Method 4El): Examined B2 and E2ca. Most macro surfaces have little or no associated preferred orientation. A very few clay films occur. The R2 has slightly weaker clay orientation than R2cs. Markedly fewer clay and pressure films than in the R2 of Weld 3-3.

Clay Mineralogy (Method 7A): The dominant mineral in the clay fraction in all horizons is montmorillonite. In the A horizon and noncalcareous B horizon this mineral is somewhat disordered, partly weathered, or contains interlayered mineral as indicated by diffuse, broadened X-ray reflections. These horizons also contain slightly more mice and kaolin than the calcareous horizons. The montmorillonite in the calcareous B and C horizons gives very strong sharp X-ray reflections indicating regular crystallinity as well as large amounts.

Sand mineralogy (Method 7E1): Deertrail has an increase in mica with depth.

SOIL SURVEY LABORATORY Lincoln, Nebr. November 1958

Trout Creek Watershed,
Chaffee County, Colorado
gravelly sandy loam

SOIL NOS. S57Colo-8-1 LAB. NOS. 8172-8178

	 	1Bla		PARTI	CLE-SIZ	E DISTRIB	UTION (in	пм.) (р	or cent)	_3A1		2 : : : : : : :
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND			VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURA CLASS
		2-1	1-0,5	0.5-0.25	0. 25-0. 10	0.10-0.05	0.05-0.002	< 0.0C2	0.2-0.62	Q02-QC02	(<19mm	5
0-1½ 1½-8 8-19 19-29	A°, A°° Al A2 Bl B2t B3 C	19.9 24.7 17.3 17.0	15.5 17.6 18.8 18.3 31.0 31.7	10.0 9.5 9.2	14.9a 13.7a 14.4a 17.9a	11.4a 6.5a	29.6 20.9 15.1 16.1 5.3 5.0	5.3 8.7 13.3 9.6	29.1 17.2	5.6	38	cosl cosl cosl cosl lcos lcos
143 044344444444444444444444444444444444	mmann PH	M-669591816161616174		MIC MA		6Cla	***************	6E1a	***************************************		TURE TE	NSIONS
8Cla	1:5	1.10	6Ala organic carbon	NITRO-	C/N	Free Iron Fe ₂ 0 ₃ %		CeCO3 equive alem		481a 1/10 atmcs.	4Bla 1/3 ATMOS.	4 <u>B2</u> 15 atmos.
6.7 6.3 6.6 6.4 6.8 6.7			2.16 0.91 0.25	0.098 0.042 0.014 0.011	22	1.0 1.0 1.1 1.2 1.2		Q Q QQ		24.5 19.3 13.9 17.2 10.8 8.9	7.4 10.0	3.9 3.6 4.8 3.8 4.1
5Ala	***************************************	EXTRAC	TABLE	CATIONS	5Bla.	BASE SAT.	503	Sun	Sum	Ca/Ng	44,238 ⁷ 6,271,865,8784	- - - - - - - - - - - - - - - - - - -
CATION	6N26	6 <u>021</u>	6H10_	622 ₂ _	6ന്മം			Deses	Cation	a '		<u> </u>

Soil Type: Edlos gravelly sandy loam

Soil Nos.: 857(Colo-8-1 Location: Trout Creek Watershed, Chaffee County, Colorado. Physiographic Position: Mountain side. Elevation 9,730 feet.
Topography: Steeply sloping north face approximately 40 percent gradient.
Drainage: Well drained.

Vegetation: Spruce, fir, with only a small amount of understory brush and grass. Use: Mational Forest lands.

Collected by: John Ret Described by: A. J. Cline. John Retzer, A. J. Cline, E. M. Payne, T. Baber, W. Hunter and P. Wesswick, September 18, 1957.

Horizon and Lincoln Lab. No.

to 0 inch. Organic horizons too thin to be sampled separately, consisting mainly of undecomposed forest 8172 debris of branches, bark, and evergreen needles, but with a very thin partially decomposed horizon at its base.

0 to 11 inches. Gray (10YR 5/1 dry) to very dark grayish brown (10YR 3/2 moist) gravelly sandy loam; soft A1. 81.73 when dry, very friable when moist; weak very fine platy structure, breaking to moderate fine crumb; noncalcareous, approximate pH 6.8; lower boundary clear and wavy.

1½ to 8 inches. Hight brownish gray (10YR 6.5/2 dry) to grayish brown (10YR 5.5/2 moist) gravelly loamy sand; soft when dry, very friable when moist; weak fine platy structure, breaking to moderate medium crumb; noncalcareous, approximate pH 6.8; this horizon is very vesicular and contains many medium-sized pores; A2 8174 about 40 percent of the horizon is gravel; lower boundary gradual and wavy.

BL 8175 8 to 19 inches. Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) stony sandy loam; soft when dry, very friable when moist; weak to moderate fine subangular blocky structure; noncalcareous, approximate pH 6.6; this horizon contains aggregates of material similar to those of the underlying horizon but which are completely enclosed and surrounded by light-colored material similar to that of the overlying horizon. Some of the aggregates in this horizon have thick continuous clay skins and in some parts of the horizon thick gelatinous seams of bright-colored clay-like material occur between the rocks and in natural cleavage plains; about 50 percent of this horizon is stone and gravel; lower boundary gradual and wavy.

B2t 19 to 29 inches. Light brown (7.5YR 5.5/3 dry) to brown (7.5YR 5/4 moist) stony sandy clay loam; hard 8176 when dry, friable when moist; moderate medium subangular blocky structure; noncalcareous, approximate pH 6.6; there are thick continuous clay skins on the surfaces of the soil aggregates; 40 percent of this horizon is gravel and stone; lower boundary gradual and smooth.

B3 8177 29 to 33 inches. Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3 moist) stony learny sand; slightly hard when dry, very friable when moist; weak medium granular structure to single grain; noncalcareous, approximate pH 6.6; there are a few thin clay skins on the soil aggregates and coating the surfaces of the rock fragments; about 40 percent of this horizon is gravel and stone; lower boundary gradual and smooth.

33 to 45 inches plus. Brown (10YR 5/3 dry) to dark brown (10YR 3/3 moist) stony sand and gravel. This horizon is principally disintegrated granite and biotite schist; its pH is approximately 6.6. 8178

Remarks: Profile downslope in position from Edloe, Soil Nos. 85700lo-8-2.

SOIL	SURVEY	LABORAT	ORY Lincoln,	Nebr.	November	1958
SOIL		oe velly sandy l	LOCATION		Creek Wate County,	

SOIL NOS. S57Colo-8-2 LAB. NOS. 8179-8183

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DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURAL CLASS
		2-1	1-0.5		0, 25-0, 10		0,05-0,002	< 0.002	0. 2-0.02	<u> </u>	-)
T .	Al A2 Bl B2t	22.2 25.9 30.1 27.8	15.5 20.4 24.5 23.7	8.8 9.7 9.4	5.2a 11.3a 11.9a 10.6a	10.la 7.7a 5.7a 7.7a	32.5 20.6 12.4 14.2	8.5 5.3 5.7 6.6	28.5 25.0 17.9 19.3	14.9 8.6 5.7 6.6	47 49 47 54	cosl cosl lcos lcos
18-34+	Cr	15.0	28.7	13.0	20.8a	7.6a	8.6	6.3	21.8	4.6	<i>5</i> 8	lcos
	ρH		CRG/	NIC MA	TTER	601a		6Ela	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	MOIST	URE TE	NSIONS
8CLa	1:5		6Ala Organic Carbon	NITRO-	C/N	Free Iron Fe ₂ 0 ₃ %		CnCO3 equiv- alent		HBla ATMOS.	1/3 ATMOS.	4B2 15 atmos.
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Soil Type: Filoe gravelly sandy loam Soil Nos.: S57Colo-8-2

Location: Trout Creek Watershed, Chaffee County, Colorado. Physiographic Position: Mountain side. Elevation 9,855 feet.

Topography: Steeply sloping north-facing mountain slope, approximate gradient 42 percent.

Drainage: Well drained.

Vegetation: Aspen, fir, spruce and Kinikinick.

Use: National Forest Service lands.

John Retzer, A. J. Cline, E. M. Fayne, T. Baber, W. Hunter, and E. Wesswick, September 18, 1957. Collected by: John Ret: Described by: A. J. Cline.

Horizon and Lincoln Iab. No.

1 to 0 inch. This is a thin organic must made up mostly of undecomposed pine needles, leaves, and grass Ao, Aoo remains, but having its lower portion moderately well decomposed. It rests abruptly on the horizon below.

O to 2 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) gravelly sandy loam; soft when dry, very friable when moist; moderate fine crumb structure; noncalcareous; about 25 Al 8179 percent of this horizon is gravel; lower boundary abrupt and smooth.

2 to 8 inches. Light gray (10YR 7/2 dry) to grayish brown (10YR 5/2 moist) gravelly loamy sand; soft when A2 8180 dry, very friable when moist; weak fine platy structure breaking to moderate fine crumbs; noncalcareous; there are common numbers of small distinct lOYR 5/4 mottles; about 40 percent of this horizon is gravel; lower boundary gradual and wavy.

8 to 13 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) gravelly loamy sand or gravelly 8181 sandy loam; soft when dry, very friable when moist; weak medium subangular blocky structure, breaking to moderate fine granular; noncalcareous; this horizon contains some aggregates similar in character to those of the horizon below but these are imbedded in light-colored material similar to that of the overlying horizon; there are a few thin continuous clay skins on some of the soil aggregates, and in some portions of the horizon seams of clay-like material are visible; about 40 percent of the horizon is gravel; lower boundary gradual and wavy.

13 to 18 inches. Pale brown (lOYR 6/3 dry) to brown or dark brown (lOYR 4/3 moist) stony sandy clay loam; RPt. 8182 hard when dry, friable when moist; moderate medium subangular blocky structure; noncalcareous; there are thin nearly continuous clay skins on the surfaces of the soil aggregates in this horizon; approximately 65 percent of the horizon is stone and gravel; the lower is diffuse and irregular; some gray coating material occurs on the surface of the soil aggregates in this horizon.

18 to 34 inches plus. This horizon is mainly weathered granite and biotite schist. The material is partially indurated but usually can be broken between the thumb and finger. Its consistence increases 8183 with depth.

Remarks: Profile intermediate in position on slope between Edloe profiles, Soil Nos. S5700lo-8-1 and S5700lo-8-3.

SOIL SURVEY LABORATORY Lincoln, Nebr. November 1958 Trout Creek Watershed, SOIL TYPE Edloe LOCATION Chaffee County, Colorado gravelly sandy loam

SOIL NOS. S57Colo-8-3 LAB. NOS. 8184-8188

**************************************		1	Bla	PART	CLE SIZ	E DISTRIA	UTION (in	mm.) (p∈	r cent)	3A1		;
DEPTH		VERY				VERY	•				2A2	TEXTURAL
INCHES	HORIZON	COARSE SAND	COARSE SAND	MEDIUM SAND	FINE	SAND	SILT	CLAY			>2	CLASS
		2-1	1-0.5	0.5-0.25	0.25-0,10	0.10-0.05	0.05-0.302	< 0.002	0.2-0.02	GC2-GC02	(<19mm	1
0-1	Al	20.3		6.8	10.5a	8.3a	31.5	8.0	•	14.7	40	cosl
1-3	A21	18.6		7.9		10.6a	29.2	7.4	28.9	14.5	40	cosl
3-10 10-18	A22 Bl	26.3 18.3	19.1 16.6	_	12.76	7.86	20.2	5.0		10.0	53	cosl
18-31+		15.9	21.3		15.5b 19.3b		21.6 16.0	7.3 6.7		9.9 8.0	53 58	cosl lcos
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Soil Type: Edloe gravelly sandy loam

Soil Nos.: \$57Colo-8-3

Location: Trout Creek Watershed, Chaffee County, Colorado.

Hysiographic Position: Mountain side. Elevation 9,955 feet.

Topography: North-facing mountain slope of about 45 percent gradient.

Drainage: Well drained.

Vegetation: Spruce, fir, and some understory grasses and shrubs. Use: National Forest Service lands.

John Retzer, A. J. Cline, E. M. Payne, T. Baber, W. Hunter and E. Wesswick. September 8. 1957. Collected by:

Described by: A. J. Cline.

Howizon and Tincoln Teh No.

1/4 to 0 inch. This horizon is a very thin mat of organic material in both decomposed and undecomposed An. Ann forms. The undecomposed portions are mainly spruce and fir needles.

O to 1 inch. Gray (10YR 5/1 dry) to very dark gray (10YR 3/1 moist) gravelly sandy loam; soft when dry, 8184 very frigble when moist; moderate fine crumb structure; noncalcareous, approximate pH 6.8; about 25 percent of this horizon is gravel; lower boundary abrupt and smooth.

1 to 3 inches. Pale brown (10YR 6/3 dry) to brown or dark brown (10YR 4/3 moist) gravelly sandy loam; soft when dry, very friable when moist; weak fine platy structure, breaking to moderate fine crumbs; noncalcareous, approximate pH 6.6; there are a few small faint 10YR 5/6 mottles; about 20 percent of this 8185 horizon is gravel: lower boundary clear and wavy.

3 to 10 inches. Light brownish gray or pale brown (10YR 6/2.5 dry) to dark grayish brown or grayish brown A22 8186 (10YR 4.5/2 moist) gravelly loamy sand; soft when dry, very friable when moist; moderate fine granular structure; noncalcareous, approximate pH 6.6; there are a few small faint lOYR 5/6 mottles; approximately 50 percent of this horizon is gravel; lower boundary diffuse and wavy.

10 to 18 inches. Pale brown or very pale brown (10YR 6.5/3 dry) to brown (10YR 5/3 moist) stony heavy sandy loam; soft when dry, very friable when moist; moderate fine granular structure; noncalcareous; approximate pH 6.6; some of the aggregates in this horizon appear to be similar to that of the horizon 8187 below but are imbedded in a light-colored material similar to that of the horizon above; some of the soil aggregates have thin continuous clay skins and in some parts of the horizon thin seams of clay-like material are clearly visible; approximately 60 percent of the horizon is stone and gravel; lower boundary gradual and wave.

18 to 31 inches plus. Pale brown to light yellowish brown (10YR 6/3.5 dry) to brown or dark yellowish ROI. 8188 brown (low 4/3.5 moist) very stony sandy clay loam; the texture as given is that of the fine-textured material which occurs between the rocks and gravel fragments: this horizon is mainly well-weathered

granite and biotite schist with about 90 percent of the horizon being rock fragments. The cracks and channels between the rocks are filled with seams of fine-textured material approximately 7.5YR 5/4 in color and approximately a sandy clay loam in texture. The faces of many of the rocks are thickly coated with clay skins as are the aggregates of the fine-textured material; the horizon is hard when dry, friable when moist; the fine-textured portions of the horizon have a weak medium subangular blocky structure; the horizon is noncalcareous, approximate pH 6.6. It is believed that this horizon represents the B2 horizon of this soil that is forming in the cracks between the rocks and may continue for some depth. It was impossible at this location to penetrate below 31 inches without an excessive amount of labor; however, at 31 inches the fine-textured, somewhat brighter material, still continued between the rock fragments. It seems probable that in view of the nature of this horizon the mechanical analysis which will be obtained will probably not represent the fine-textured seams described since much of the rock is well-weathered and on treatment is apt to shatter into sand-sized particles.

Remarks: Profile upslope in position from Edloe, Soil Nos. 857Colo-8-2.

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SOIL SURVE	Y LABORATOF	RY <u>I.1</u>	ncoln,	Mebra	ska					LAB	3. Nos	18622	2-18629	<u> </u>	arch 19	67		
	l Methods																	
									ss and parti			3A1		T 2424	Tiper			
		 	Total	$\overline{}$	-:		T	Sand		Si		1	l	3Alp	3Ala Nomer-		rse fragme	nts2A2
Depth	Horizon	Sand	Silt	Clay	Very coarse	Coarse	Medium	Fine	Very fine	0.05.00-	Int. III			mm	bonate	>- 2	2 - 19	19-76
(in.)		(2-0,05)	(0.05- 0.002)	(< 0.002)	(2-1)) (0.1–0.05)	v.05-0.02	0.002 0.002)	(0.2-0.02)	(Z-0.1)	Lume	C1ay C0002		Pe	t. of
	4-4	<u> </u>					t. of << 2		T10 0	06 h	120.6	20. #		20.0		Pct.	7	76mm
0-5 5-8	Apl Ap2	19.1	46.0	34.9 38.4	0.8	2.0	1.8	3.7	9.8	26.4	19.6 19.6	39.5 36.3	8.3 7.7	22.0	35 38 46	tr tr	ļ.	
<u>8-13</u>	R21t	17.5	40.9	45.9	1.0	1.3	1.0	2.1	7.8	21.5	19.4	30.6	5.4		46	tr		
13-19	B22t	15.9	42.6	41.5	1.0	1.8	1.5	2.9	8.7	22.1	20.5	32.5	7.2	30.0	42	tr		1
19-24 24-35	B3ca HB21bca	20.9	35.5	39.0 38.9	2.2	3.0 4.3	2.3 3.6	6.5	9.0	20.5 18.8	19.6 16.7	31.9 31.5	12.0 16.6	l	39 38	tr 2	l .	
35-55	II) 22bcs	27.8	33.4	38.8	2.4	4.6	4.1	7.5	9.2	16.7	16.7	30.1		├ ┈─	39	tr	 	$\vdash \lnot$
55-72	IIB3bca	27.4	32.4	40.2	2.3	6.0	4.2	7.0	7.9	16.0	16.4	27.7	19.5	13.4	40	tr		
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	6Ala	6Bla	İ	as C	onate aCOo	602a Ext.		Bulk densi	4A1b	401	4B4	Vater conte		401	Field		рн 8стр	8C1a
Depth (In.)	Organic carbon	Nitrogen	C/N				Field	1/3-	Air	COLE	Field			1/3-to	Capa-	1	Sat.	1 1
(In.)	- T			687p	ന്സ		r-at-	1 <u>24</u>	<u> </u>				B	72 70.	سخةر		٠	_(1:1)
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Soil Type Soil Nos. *Fondis clay loam 863Colo-18-3 285 feet west, 360 feet south of northeast corner of Section 5, T98, R65W, Douglas County, Colorado Location Continental, average annual precipitation 17 inches, mean annual temperature 46 degrees F. Growing season 130 days. Elevation 6,750 feet Climate Vegetation Wheat Parent Material : Outwash and Acolian, probably Quartenary age Physiographic Position Upland Rearly level, 2 percent east facing slope. Slope about 800 feet long, Fit located approximately 300 feet from creat of ridge Relief Drainage Internal drainage is slow to very slow, intake is moderate Moist in the top 8 inches and below 4 feet. Dry in between Moisture Stoniness Few fine water worn gravels throughout Salt or Alkali None other than calcium carbonate observed Erosion Slight, primarily water R. K. Dansdill, J. B. Brown, R. H. Jordan, and L. G. Shields; August 13, 1963. Sampled by Described by : J. B. Brown Horizon and Lincoln Lab. No. 0 to 5 inches. Very dark grayish brown (10YR 3/2 moist) silty clay loam; grayish brown (10YR 4.5/2 Ap1 18622 dry); weak to moderate fine granular structure; soft when dry, firm when moist; abrupt smooth boundary. 5 to 8 inches. Very dark grayish brown (10TR 3/2 moist) clay loam; dark grayish brown (10TR 4.5/2 dry); moderate medium to coarse platy structure; very hard when dry, firm when moist; some bleached sand grains; few water worn gravels; abrupt smooth boundary. Ap2 18623 8 to 13 inches. Very dark grayish brown (10TR 3/2 moist) clay; dark grayish brown (10TR 4/2 dry) 18624 and very dark grayish brown (10TR 3.5/2 moist and crushed); moderate medium prisms breaking to strong medium and fine angular blocks; very hard when dry, very firm when moist; thin continuous clay films on ped surfaces; clear smooth boundary. 13 to 19 inches. Brown (10TR 4/2 moist) clav: brown (10TR 4.5/2 drv): weak medium to coarse prisms B?2±

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"Fondis clay loam

	SOIL SURVEY	LABORATOR	Y Lin	cola,	Kebra	s ka					LAE	3. Nos	18 <u>63</u>	0-186 <u>37</u>	Marc	h 1967			_
	General	Methods	: 1A,	1B1b,	2A1,	238													
				Total		1			Size cl Sand	less and partic		er (mm) it	341		-	3Ala_	Corre	ragments 2	40
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	Depth	Horizon	Send	Silt	Clay	Very	Goarse	Medium	Fine	Very fina	\	Int. 133	int, II	l	h	L-	ra la	ـوا أوا ــ	76
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SOIL Nos. 863Colo-18-4 LOCATION Douglas County, Colorado

Soil Type : "Fondis clay loam

: 863Colo-18-4 Soil Nos.

Location

: 122 fest west of the southeast corner of Section 19, T6S, R66W, Douglas County, Colorado : Continental, average annual precipitation 17 inches, mean annual temperature 46 degrees F. Growing season 140 days. Elevation 6,700 feet Climate

Vegetation Parent Material : Outwash and acolian, probably Quartenary age

: Wheat

Physiographic

: Upland Position

: Mearly level, 2 percent northeast facing slope. Slope about 800 feet in length. Pit about 400 Relief

feet below ridge

Drainage : Internal drainage medium to alow; moderate intake rate

: Moist to 6 feet plus. This field summer fallowed, summer 1963 Moisture : Few fine water worn gravels throughout the pedon Stoniness

Salt or Alkali : None observed, other than calcium carbonate

: Slight, primarily water

: R. K. Danadill, J. B. Brown, R. H. Jordan, and L. G. Shields; August 13, 1963 : J. B. Brown Sampled by

Described by

Horizon and Idncoln Lab. No.

0 to 5 inches. Very dark grayish brown (10YR 3/2 moist) light silty clay losm; dark grayish brown Apl 18630 (10TR 4.5/2 dry); moderate fine granular structure; soft when dry, friable when moist; abrupt amouth boundary.

5 to 7 inches. Very dark grayish brown (10YR 3/2 moist) clay losm; dark grayish brown (10YR 4/2 dry); moderate medium subangular blocky structure; hard when dry, firm when moist; cultivation marks are Ap2 18631 present; abrupt smooth boundary.

7 to 12 inches. Dark brown (10TR 3/3 moist) clay; brown (10TR 4/3 dry); moderate medium prismatic structure breaking to strong fine angular blocks; very hard when dry, very firm when moist; thin continuous clay films on ped surfaces; few slickensides; clear smooth boundary. B21t 18632

12 to 24 inches. Dark grayish brown (10TR 4/2 moist) clay; grayish brown (10TR 4.5/2 dry); moderate medium to fine prisms breaking to strong fine angular blocks; very hard when dry, very firm when moist; thin nearly continuous clay films; many slickensides; abrupt smooth boundary. 18633

24 to 28 inches. Yellowish brown (10TR 5/4 moist) heavy sandy clay loam; light yellowish brown (10TR 6/4 dry) and brown (10TR 5/3 moist and rubbed); moderate medium prisms breaking to moderate medium angular blocks; very hard when dry, very firm when moist; very highly calcareous; some dark streaks 1/4 to 1/2 inches wide are present in this horizon along with lime mycelia; thin patchy clay 33ca 18634 films; clear smooth boundary,

28 to 45 inches. Dark brown (7.5YR 4/4 moist) sandy clay losm; brown (7.5YR 5.5/4 dry); moderate medium to coarse subangular blocky structure; hard when dry, firm when moist; very highly calcareous; few thin patchy clay films; some lime mycelia; fine gravel estimated at 5 percent; gradual boundary. IIB2bca 18635

45 to 57 inches. Strong brown (7.5YR 5/6 moist) sandy clay loam; reddish yellow (7.5YR 6/6 dry); weak coarse prismatic structure; hard when dry, firm when moist; very highly calcareous; few patchy clay films on vertical faces; lime streaks 2 to 6 inches wide; gradual boundary. IIB3bcs 18636

57 to 70 inches. Light brown (7.5TR 6/4 moist) light sandy clay loss; pink (7.5TR 7/4 dry); week coarse prismatic structure; hard when dry, friable when moist; very highly calcareous; lime appears TICOL 18637

to increase with depth.

Remarks: This soil is common to the tublelends in Douglas County and on side slopes overlying the Dawson formation, The buried soils are typical but the break between the older soils and the modern soil is somewhat obscure. This is close to the southern extremity of the colder part of the area where this soil has been mapped in Douglas County. Slickensides are not evident in this soil in the buried horizons. Although 1963 was a much drier year than normal, this soil is moist throughout where it had been summer fallowed during 1963. Under native sod this soil generally has a loam surface 3 to 4 inches thick with a clay loam B1 horizon. Where cultivated the surface is mixed and is generally a light clay losm in texture.

Bureau of Public Roads Samples: E22t, IIE2bca, and IICca horizons.

Mineralogy (Method 781): Apl, B22t, and IIB3bca horizons. Observations on very fine sand: Feldspar and quartz are present in approximately equal amounts; accessory minerals are 10 to 20 percent. Orthoclase is the principal feldspar; microcline and low-calcium plagiculase are present in lesser amounts. Biotite and hornblende are the most abundant accessory minerals. Other minerals identified include epidote, zoisite, hyperstheme, zircon, chert, garnet and opaquee; volcanic glass is absent. The number of ferromagnesian minerals appears to increase slightly in the IIB3bcs horizon; otherwise, the mineralogy is similar.

SOIL Nos. S63Colo-58-3 LOCATION Sedgwick County, Colorado SOIL Haxtun loamy sand SOIL SURVEY LABORATORY Lincoln, Mebraska _ LAB. Nos. <u>18524-18534</u> March 1967 General Methods: 1A, 1Blb, 2A1, 2B Size class and particle diameter (mm) 3A1 Total Silt Coarse fragments2A2 Medlum Fine Very fine Clay int. III int. 🎞 Horizon Coarse Depth **>-** 2 19-76 2 - 19 coarse (2-1) (1-0.5) (0.5-0.25) (0.25-0.1) (0.1-0.05) 0.05-0.02 (0.02-0.002) (0.2-0.02) (2-0.05) (0.05-0.002) ( < 0.002) (In.) (2-0.1)(< 19) 34.3 9.8 29.6 12.2 26.4 12.5 26.6 13.5 86.5 5.1 9.4 2.3 31.2 36.3 7.4 14.1 6.1 24.1 Ap B2 76.7 61.8 2 6-14 74.0 11.9 12.0 18.6 1.6 tr 68.9 15.9 15.8 15.9 14.8 5.5 4.6 14-18 B21tb 15.2 2.1 12.1 10.4 36.2 36.8 56.4 tr 72.7 70.2 55.6 18-26 B22tb 2.9 13.8 13.3 9.4 59.2 tr 26-33 33-42 42-59 25.8 15.0 15.8 183b 14.0 2.0 12.6 38.8 10.2 5.6 55.2 tr 17.3 7.2 25.0 1.7 3.7 9.6 16.5 16.5 28.9 17.4 5.7 9.7 2.6 37.8 68.0 CLb 10.0 44.2 27.1 tr 16.5 8.3 CZb 18.9 36.6 49.7 47.4 55.4 54.7 59-65 IIC3b 65-80 IIC4cab 80-134 IIC5cab 9.3 8.0 25.0 18.3 25.5 19.4 25.5 20.3 68.0 2.0 7.0 13.4 2.6 35.6 tr 25.5 25.5 4.8 4.3 37.6 38.0 IIC4cab 66.8 9.1 24.1 1.8 1ē.1 tr 75.7 6.8 17.5 2.9 12.4 14.6 tr 79.2 24.5 134-216 IIC6b 12.0 8.8 3.6 12.5 14.6 24.0 6.9 5.1 43.4 7 611b 6Ala 6Bla 4D1 **Bulk density** Water content 4Ala 4Ald 4Alb 484 4Blc 4B2 4C1 8С1ъ 801a 612 Depth Organic Nitrogen C/N COLE Field Field | 1/3-Air 1/3- | 15-1/3 to Sat. (In.) carbon as CaCO₂ (1:1) State Dry State Bar 15-Bar Bar Paste • in/in. g/cc Pct. Pct 0.003 12.3 10.44 2.9 0.014 14.3 11.4 5.2 0.020 14.4 12.8 7.4 1.72 1.70c 1.72 1.63 1.59 1.66 1.66 1.60 1.71 0.033 0.044 -(s) -(s) -(s) 0.28 6.8 0.131 6-14 0.32 7 0.10 6.9 7.0 4-18 0.039 0.09

Soil Type: Haxtum loamy sand

Soil Nos.: 863Colo-58-3

Location: 726 feet morth, 80 feet west of southeast corner, Sec. 18, T9M, R46W, Sedgwick County, Colorado Climate: Continental climate, average annual precipitation of 17.5 inches, frost-free season of 147 days, mean

Elevation: 3,900 feet Vegetation: Cultivated

Parent Material: Acclien sand over loess-like material Physiographic Position: Upland

Relief: Slightly concave, 1 percent slope

Drainage: Well drained Moisture: Moist to 26 inches, nearly dry below

Salt or Alkali: Nome

Brosion: Slight, primarily wind Sampled by: R. C. Accola, J. I. Brubscher, R. B. Grossman, R. Moreland, E. M. Payne, and J. L. Walker: July 8, 1963 Described by: J. I. Brubacher

Horison and Lincoln Lab. No.

O to 6 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) loamy sand; weak fine granules breaking to single grain structure; soft dry, very friable when moist; noncalcareous; Ap 18524 clear smooth boundary.

6 to 14 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) sandy loam; 18525 weak medium prismatic breaking to weak medium subangular blocky structure; soft dry, very friable when moist; noncalcareous; clear smooth boundary.

B21tb 14 to 18 inches. Grayish brown (10YR 5/2 dry) to very dark brown (10YR 2/2 moist) sandy clay loam; 18526 weak moderate medium prismatic breaking to weak moderate medium subangular blocky structure; soft dry, very friable when moist; noncalcareous; very thin patchy clay skins; clear smooth boundary.

B22tb 18 to 26 inches. Gray (10YR 5/1 dry) to very dark gray (10YR 3/1 moist) sendy clay loam; weak moderate medium prismatic breaking to weak moderate subangular blocky structure; very frieble moist; non-calcareous; thin continuous clay skins; streaks of LOYR 2/1 when moist; clear smooth boundary. 18527

BRb 26 to 33 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist") sandy loss; 18528 weak medium prismatic breaking to weak, medium subangular blocky structure; slightly hard dry, very friable when moist; noncalcareous; very thin patchy clay akins; clear smooth boundary.

mb 33 to 42 inches. Pale brown (10YR 6/3 dry) to dark brown (10YR 4/3 moist) loam; weak medium prismatic 18529 breaking to weak medium subangular blocky structure; soft dry, very friable when moist; noncalcareous; clear smooth boundary.

42 to 59 inches. Pale brown (10TR 6/3 dry) to dark brown (10TR 4/3 moist) loamy sand; massive; soft dry, 18530 very friable when moist; noncalcareous; abrupt wavy boundary.

11C3b 59 to 65 inches. Pink (7.5YR 7/4 dry) to brown (7.5YR 5/4 moist) heavy sandy loam; massive; slightly 18531 hard dry, very friable when moist; noncalcareous.

IICkeab 65 to 80 inches. Pink (7.5YR 7/4 dry) to brown (7.5TR 5/4 moist) heavy sandy loam; massive; soft dry 18532 and very friable when moist; highly calcareous; clear and wavy boundary.

IIC5cab 80 to 13% inches. Pink (7.5TR 7/4 dry) to brown (7.5TR 5/4 moist) heavy sandy losm; weak coarse platy 18533 structure; soft dry and very friable when moist; highly calcareous; clear wavy boundary.

TTOSh 134 to 216 inches. Pink (7.5YR 7/4 dry) to brown (7.5YR 5/4 moist) heavy sandy loam; massive; soft 18534 dry and very friable when moist; noncalcareous.

15 feet, soil temperature was 10.5° C 18 feet, soil temperature was 10.6° C Bote:

Landscape Profile:

Pit . 110.5 108,8 Julesburg 863Colo-58-2 101.3 Pit 99.0 98.0 98.0 Haxtun S63Colo-58-3

Horizontal scale

200 feet

Vertical scale

10 feet

Bureau of Public Roads Samples:

- 0-6 inches 18-26 inches 42-59 inches B21tb IIChan - 65-80 inches

s to be .

SOIL Haxtun loany sand

SOIL Nos. S63Colo-58-5 LOCATION Sedewick County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska
General Methods: 1A, 1Blb, 2A1, 2B

LAB. Nos. 18535-18545 March 1967

	<u> </u>	T						Size clas	ss and parti	icle diamet	er (mm)	3Al						
1	}		Total					Sand		Şi		<u> </u>	T	3A1.b	3A1a	Coar	se fragme	nts 2A2
I	1		1			T	1		$\overline{}$	$\leftarrow$	T	İ	ì	1	Non-	_	1	
Depth	Horizon	Sand	Silt	Clay	Very	Coarse	Medium	Fine	Very fine	l	Int. III	Int. 🏻		1	arbon-	<b>  2</b>	2 - 19	19-76
(fn.)		(2-0.05)	(0.05-	(< 0.002)	(2-1)	(1-0.5)	(0.5-0.25)	(0:25-0.1)	(0.1-0.05)	0.05-0.02	(0.02-	(0.2 - 0.02)	(2-0.1)	KO.000	Clay		1	) ]
ì	1	]	0.002)	ľ	,,	,		<u> </u>	ļ	1	0.002)	l		l	<0002	(< 19)		t. of
0-6	A-	78.7	13.6	77	13° E	14.5	$\frac{1.04 < 2}{24.9}$	27.8	10.0	9.0	Cit. Z	1 A A	20 =	<del></del>	8	Pct.		6mm
	Ap			7.7	1.5						4.6	30.8	68.7	4.5	_	tr	j	]
6-14	B21	78.2	12.0	9.8	1.5	14.4	25.0	28.5	8.8	7.6	4.4	28.8	69.4	l	10	tr	ĺ	1 1
14-19	B22	68.5	17.6	13.9	0.5	8.9	19.9	28.2	11.0	10.6	7.0	35.1	57.5	9.0	14	tr		
19-25	B21tb	66.6	17.3	16.1	0.7	7.4	17.6	28.7	12.2	10.7	6.6	37.1	54.4	ļ	16	tr	i	
	B22tb	56.7	21.5	21.8	0.2	4.2	10.8	24.5	17.0	13.4	8.1	44.4	39.7	15.7	22	tr	1	1
33-41	B3b	58.6	23.1	18.3	0.2	2.4	6.8	24.0	25.2	15.5	7.6	56.3	33.4	ŀ	18	tr	ŀ	
41-59	Clb	78.3	12.9	8.8	1.6	7.6	17.2	33.4	18.5	9.1	3.8	45.7	59.8	4.9	9	tr		
59-80	IIC2cab	73.9a	16.9	9.2	4.0	14.1	16.8	24.6	14.4	8.2	8.7	34.7	59.5	1.2	9	2	ł	1 1
80-112	IIC3cab		9.7	6.7	9.4	18.9	17.6	25.5	12.2	5.4	4.3	30.0	71.4		7	10	Į.	
112-134			10.5	44.3	5.1	9.3	8.7	12.2	9.9	5.2	5.3	21.2	35.3		44	10		<del>                                     </del>
134-144	IIC5cab			23.4	3.9	5.9	5.3	7.8	6.8		42.3	15.2	22.9	l	ii.	6	1	i I
137-244	TIPPER	-9.10	170.9	-3.7	٥٠,۶	7.7	,.,	1.0	0.0	7.0	1	17.2		( )		"		1 1
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0-6	0.45	0.055	8	}	}	0.2	1.75	1.714		0.007	9.7	10.8e	3.6	0.12f	14.0			6.4
6-14	0.37	0.047	8	i		0.3	1.60	1.54a	1.61	0.014	11.4	13.0e	4.5	0.130	11.7			6.9
	0.36	0.046	l 8	l	Į į	0.3	1.59	1.52	1.62	0.020	13.7	13.1	6.6	0.10	13.0	i i		7.0
	0.36	0.045	8			0.3	1.71	1.63	1.75	0.024		14.5	7.5	0.11	13.7			7.0
25-33	0.41	0.049	lā	-(s)		0.3	1.67	1.58	1.72	0.028		17.1	9.4	0.12	15.3	( (		7.1
33-41	0.24	0.036	١ ٠	-(s)		0.3	1.64	1.56	1.66	0.020	10.5	15.4	9.0	0.10	16.3			7.3
	0.04	0.030		tr(s)		0.2	1.66	1.62d		0.003	4.8	12.9	4.1	0.14£				8.1
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80-112	0.02	i		2	tr	0.2	1.70	4.734	1.75	0.005	9.0	то. Об	3.0	0.101		1		8.4
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0-6	4.2	0.9	tr	0.7	5.8	2.4	8.2	6.3	1		]	]	1	I -	-		71	92
6-14	6.1	1.3	tr	0.5	7.9	2.0	9.9	8.0				l		]	4.7		80	99
14-19	8.0	1.7_	tr	0.6	10.3	2.4	12.7	10.2		<u> </u>	L			L_	4.7	L	81	101
19-25	10.3	2.2	tr	0.7	13.2	2.2	15.4	13.0							4.7		86	102
25-33	12.7	2.7	tr	1.0	16.4	2.4	18.8	15.8	Į i	1	l	l i	l		4.7		87	104
33-41	12.0	2.7	0.1	1.0	15.8	1.8	17.6	14.8			l l		l		4.4		90	107
41-59	6.9 h	1.41	tr	0.6	8.9		T	8.4					-		4.9			
59-80	6.6 h	1.31	0.1	0.7	8.7		1	7.6	1	1	ì	1		]	5.1			
80-112	4.9 h	1.21	0.1	0.6	6.8			5.8			l			1 1	4.1			
112-134	21.2 h	7.21			32.8		<b>-</b>	30.8	<b>—</b>	<del> </del>			-		2.9			
			0.7	3.7	8.0	Ī	!				J		Ì	i i	3.5	l i		
134-144	6.0 h	1.71	0.2	1.0	0.0	j		7.5							3.2	(		[ [
	Dr. d. d	4. 7		-		- 7			d mar	5			A	h-04-	man de	<del>_</del>	25	<u> </u>
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Depth	805	802	801											O-Bar				
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SOIL CONSERVATION SERVICE SOIL Haxtun loamy sand SOIL Nos. S63Colo-58-6 LOCATION Sedewick County, Colorado SOIL SURVEY LABORATORY Lincoln, Nebraska General Methods: 1A, 1Blb, 2A1, 2B Size class and particle diameter (mm) 3A1 Sitt Sand Coarse fragments 2A2 Şilt Clay Very Medium Fine Depth Horizon Sand Very fine int. III int II 2-19 19-76 coarse (2-1) (ln.) (2-0.05) (0.05-0.002) (< 0.002) (1.-0.5) (0.5-0.25) (0.25-0.1) (0.1-0.05) (0.05-0.02) (0.02-0.002) (0.2-0.02) Pct 74.7 | 16.2 | 9.1 | 0.9 74.1 | 15.6 | 10.3 | 1.6 22.4 28.7 11.1 10.3 22.2 29.3 10.3 9.6 33.8 32.7 36.6 0-7 Ap 321 11.6 22.4 5.9 6.0 63.6 tr 7-18 18-24 24-29 10.7 8.6 63.8 tr 0.8 12.0 12.0 B22 17.6 26.6 24.9 65.6 19.3 7.3 53.6 tr 59.6 21.7 18.7 0.0 48.7 28.7 22.6 0.7 49.9 29.3 20.8 0.6 B21tb 6.4 13.6 24.9 13.9 12.7 4.4 8.0 18.8 16.8 16.6 9.0 39.5 45.7 12.1 44.3 31.9 11.8 51.5 27.8 tr B22tb 29-39 tт 5.6 8.7 18.6 27.8 39-47 22.1 17.5 25.9 13.1 133b 3.0 tr 5.9 56.2 41.7 3 6Ala Bulk density Water content 8D). 15-Bar 4B2 8Cla Depth Organic Nitrogen C/N 15-Water (in.) carbon as CaCO₂ (1:1) Bar to Clay Pct. Pct. R/CC Pct g/cc 2/cc Pct. Pct. Ratio 0.56 0-7 0.063 3.5 0.38 6.1 7-18 18-24 0.41 0.054 8 4.2 0.41 6.4 0.36 0.050 6.3 0.42 7 6.7 24-29 0.41 29-39 0.49 39-47 0.28 0.048 0.41 6.8 7.7 0.055 9.5 8.6 0.42 6.9 7.0 0.41 0.08 47-54 0.39 7.1 Extractable bases Base saturation Depth (ln.) Ċa Mg Na ĸ meq/100 g Pct.

Soil Type: Hartun loamy sand

Soil Mos.: 863Colo-58-6 Location: 430 feet east, 310 feet south of northwest corner, Sec. 35, TION, R47W, Sedgwick County, Colorado. Climate: Continental climate, average annual precipitation of 17.5 inches, frost-free season of 147 days, mean annual temperature of 49.6 degrees F.

Elevation: 3,900 feet Vegetation: Cultivated

Parent Material: Acolian sand over losss-like material.

Physiographic Position: Upland

Relief: 1 percent slope

Drainage: Well drained Moisture: Moist to 18 inches, nearly dry below

Salt or Alkali: None

Erosion: Slight, primarily wind Sampled by: R. C. Accola, J. I. Brubacher, R. B. Grossman, R. Moreland, E. M. Payne, and J. L. Walker: July 9, 1963 Described by: J. I. Brubacher

Horizon and Lincoln Tab. No.

0 to 7 inches. Grayish brown (10TR 5/2 dry) to very dark brown (10TR 2/2 moist) loamy sand; weak fine AP 18546 granular structure; soft dry, very friable when moist; noncalcareous; clear smooth boundary.

7 to 18 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) sandy losm; RO1 weak medium prismatic breaking to weak medium subangular blocky structure; soft dry, very friable when moist; noncalcareous; clear smooth boundary. 18547

18 to 24 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) sandy losm; weak medium prismatic breaking to weak medium subangular blocky structure; slightly hard dry, very 18548 friable when moist; noncalcareous; clear smooth boundary.

24 to 29 inches. Dark grayish brown (10YR 4/2 dry) to very dark brown (10YR 2/2 moist) fine sandy clay loam; weak moderate medium prismatic breaking to weak moderate medium subangular blocky structure; B21tb 18549 slightly hard dry, very friable when moist; noncalcareous; thin continuous clay skins; clear smooth boundary

29 to 39 inches. Dark grayish brown (10TR 4/2 dry) to very dark brown (10TR 2/2 moist) and black (10TR 2/1 crushed) fine sandy clay loam; weak moderate medium prismatic breaking to weak medium subangular blocky structure; slightly hard dry, very frisble when moist; noncalcareous; thin continuous clay skins; B22tb 18550 clear smooth boundary.

39 to 47 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) and dark 18551 grayish brown (10TR 4/2 crushed) loam; weak medium prismatic breaking to weak medium subangular blocky structure; slightly hard dry, very frisble when moist; noncalcareous; 40 percent of horizon has streaks of brown (10YR 5/3 moist) color; clear smooth boundary.

С1ь 18552 47 to 54 inches. Very pale brown (10TR 7/3 dry) to brown (10TR 5/3 moist) sandy loam; weak medium prismatic breaking to weak medium subangular blocky structure; soft dry, very friable when moist; noncalcareous; clear wavy boundary.

ITC2cab 54 to 66 inches. Pink (7.5YR 7/4 dry) to brown (7.5YR 5/4 moist) gravelly sandy clay loam; massive structure; soft dry, very friable when moist; highly calcareous.

## Landscape Profile:

94.4 Julesburg 92.8 \$63**0010-**58-4 90.9 88.1 88.5 Hartun \$63¢olo-58-6 Haxtun 863Colo-58-5

Horizontal Scale

200 feet

Vertical Scale

10 feet

SOIL SURVEY LABORATORY Lincoln, Nebr. February 1959 SOIL TYPE Heath LOCATION Chaffee County, Colorado clay loam

SOIL NOS.

H+1944949138588991		1Bla		PART!	CLE SIZ	E DISTRIB	UTION (in	mm.) (p4	er cent)		*	; ; ;
DEPTH INCHES	HGRIZON	VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.65	SILT 0.05-0.002	CLAY	0.2-0.02	C 02-0 002	2A2 > 2	TEXTURA CLASS
0-2 2-5 5-9 9-13 13-28 28-39	ВЗса	8.5a 4.6a 2.6b	6.1a 4.6a 3.9b 5.0b 6.5c	3.3ª 2.8ª 2.9b 3.0b 3.3°	6.2a 6.0a 5.4b 4.2b 4.5c	8.0a	40.8 35.8 34.5 35.2	27.0 38.9 44.3 41.2 33.4	28.7 25.3 22.0 16.8 16.4	23.5 21.1 22.2 25.9	19 3 7 24 35 50	c1/1 c1 c c c1
8cla	pH 1:5		ORGA 6Ala ORGANIC CARBON	MIC MA 6Bla NITRO- GEN		Free Iron Fe ₂ 03	Mastr törededesüber	6Fla CoCO3 equiv- ulent	P + HT 4 4 9 A by 7 5 5 a by 5 4 a by 7 5 5 a by 5 4 a by 7 5 5 a by 5 4 a by 7 5 a by 5 4 a by 6 a by 7 a by 6 a by 7 a by 6 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a by 7 a		TURE TI	
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5 <u>A]</u> a		EXTRAC				BASE	5C3	Sum	Sum	Ca/Mg	7	

Soil Type: Heath clay loam.

Location: SE¹ of Sec. 17, Tl3S, R77W, Chaffee County, Colorado.

Date of Sampling: September 1957.

Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline

Physiographic Position: Side slope of a high mountain valley at an elevation of approximately 9,000 feet.

Topography: A moderate convex slope of approximately h percent facing east.

Drainage: Well drained. Vegetation: Saakeweed, ring muhly, with some blue grama.

Use: National Forest Service land. Soil Nos.: \$58Colo-8-2

## Lincoln Horizon

Lab. No.

9050 A₁ 0-2 Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/1.5 moist) loam; soft when dry, very friable when moist; moderate very fine granular structure; noncal careous; lower boundary clear and smooth.

9051 AB 2~5 inches Very dark grayish brown or dark grayish brown (10YR 3.5/2 dry) to very dark brown (10YR 2/2 moist) heavy loam or light clay loam; slightly hard when dry, very friable when moist; weak to moderate fine subangular blocky structure breaking to moderate fine granules; moncal careous; there are a few thin patchy clay skins principally on the vertical faces of the soil aggregates; lower boundary clear and smooth.

9052 B_{2t} 5-9 inches

Very dark grayish brown or dark grayish brown (10YR 3.5/2 dry) to very dark brown or very dark grayish brown (10YR 2.5/2 moist) clay loam; hard when dry, very friable when moist; weak to moderate fine prismatic structure breaking to moderate fine subangular blocks; noncalcareous; there are thin to medium patchy clay skins on both the horizontal and vertical faces of most of the soil aggregates; lower boundary gradual and smooth.

9053 B 9-13 3ca inches Grayish brown (2.57 5/2 dry) to dark grayish brown (2.57 4/2 moist) haavy loam or light clay loam; hard when dry ware

friable when moist; weak to moderate fine prismatic structure breaking to moderate fine subangular blocks; violently effervescent; this is a weak horizon of lime accumulation with some visible lime occurring as concretions; there are thin patchy clay skins principally on the vertical faces of some of the soil aggregates; lower boundary gradual and smooth.

9054 Cca 13-28 inches Light brownish gray (2.5Y 6/2 dry) to dark grayish brown or grayish brown (2.5Y b.5/2 moist) gravelly loam; hard when dry, very frible when moist; massive or very weak fine subangular blocky structure; violently effervescent; this is a moderate horizon of lime accumulation with visible lime occurring as concretions, as thin seams and streaks or as coatings on the surfaces of the rock and gravel; approximately 25 percent of this horizon is cobble and gravel; lower boundary diffuse and smooth.

9055 C 28-39 / inches

Light clive brown (2.57 5/3 dry) to clive brown (2.57 h/3 moist) gravelly clay loam; hard when dry, very friable when moist; massive; violently calcareous; this horizon contains

SOIL SURVEY LABORATORY Lincoln, Nebr. February 1959 SOIL TYPE Heath LOCATION Chaffee County, Colorado

SOIL NOS. 9062-9066 LAB. NOS. 9062-9066

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18-26	ВЗса	2.2b					48.7		15.9		8	sicl
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5Ala		EXTRAC				BASE SAT.	_	Sum	Sun	Ca/Mg		
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Soil Type: Heath loam.

Location: NEt of Sec. 28. TIRS. R77W. Chaffee County. Colorado.

Date of Sampling: September 1957

Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline

Physiographic Position: Side slope of a high mountain valley at an elevation of

A 9 __ David anguille become our angular become for the 1 m/o and an

approximately 9,000.

Topography: A moderate convex slope of approximately 4 percent facing east.

Drainage: Well drained.

Vegetation: Sage, western wheat grass, and ring muhly.

Use: National Forest Service land.

Soil Nos.: 858Colo-8-4

Lincoln Horizon

slightly hard when dry, very friable when moist; moderate very fine granular structure; strongly effervescent; lower boundary clear and smooth.

Soil Type: *Julesburg loamy sand

Soil Nos.: 863Colo-58-2

Location: 1,043 feet north, 165 feet east of west quarter corner, Sec. 17, T9N, R46W, Sedgwick County, Colorado.

Climate: Continental climate, average annual precipitation of 17.5 inches, frost-free season of 147 days, mean annual temperature of 49.6 degrees F.

Elevation: 3,900 feet Vegetation: Cultivated

Vegetation: Cultivated
Parent Material: Acolian sands
Physiographic Position: Upland
Relief: Convex 4 percent southwest facing slopes
Drainage: Well drained
Moisture: Nearly dry
Salt or Alkali: Rone
Erosion: Slight, primarily wind
Sampled by: R. C. Accola. J. I. Brubacher. R. B. Grossman. R. Moreland. E. M. Pavne. and J. L. Walker: July 8. 1963

Described by: J. I. Brubacher

Horison and Lincoln Lab. No.

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Αp 0 to 7 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) loamy sand; SOIL **Julesburg loamy sand SOIL Nos. 363Colo-58-4 LOCATION Sedgwick County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska

LAB. Nos. 18505-18511 March 1967

	L Method	<u> </u>						Size clas	s and parti	cle diamete	er (mm)	3A1.	<del></del>					_
			Total					Sand	•	Si						Coa	rse fragme	nts 2
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Depth	Horizon	Sand	Silt	Clay	ACTURE A	Coarse	Medium	Fine	Very fine		Int. III	Int. II (0.2–0.02)	40.01			<b>&gt;−</b> 2	2 - 19	19-
(In.)		(2-0.05)	(0.05-	(< 0.002)	(2-1)	(1-0.5)	(0.5-0.25)	(0.25-0.1)	(0.1-0.05)	0.05-0.02	0.02-	(0.2-0.02)	(2-0.1)				L Po	t. of
		<u></u>	, ′	•			. of -< 2 o		<u>'</u>							Pct.	-< 7	6mm
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6-10	Ap2	84.0	5.7	10.3	6.8	18.4	20.8	31.1	6.9	3.6	2.1	25.1	77.1			1	1	
	B2t	85.8	4.8	9.4	9.0	20.0	19.5	30.5	6. <b>8</b>	2.9	1.9	24.3	79.0			tr	<u> </u>	<u>L</u>
18-32	B3	86.3	5.5	8.2	5.5	17.6	21.7	33.5	8.0	3.5	2.0	27.7	78.3			tr	ł	
	Cl	90.8	3.8	5.4	3.7	16.4	24.9	38.2	7.6	2.4	1.4	27.7	83.2			tr	ł	
	C2	90.6	4.3	5.1	4.4	16.4	21.7	37.0	11.1	2.8	1.5	32.9	79.5			tr	<u> </u>	
51-76	С3	93.6	1.8	4.6	3.2	23.5	26.2	32.6	8.1	1.2	0.6	24.7	85.5			tr		ŀ
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	8.	1	l			8.8	State	Bar	Dry		State	Bar	Bar	15-Bar			1	ĺ
		0.0	l		B	<i>T</i> e		a,	g,		p.,	P	Dad	-1-			1	
•	Pct.	Pct.	<del>                                     </del>	1	Pct.	Pct.	2/cc	g/cc	g/cc	0.000	Pct.	8.5	Pct.	in/in.			<del></del>	1
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6-10	0.34	0.038				0.3 0.3	1.73	1.76	1.74	0.010		10.9 9.3	3.7 3.7	0.08			1	6
10-18	0.21			1	$\vdash$	0.3	1.82		1.80	0.014		12.7	3.2	0.16			<del> </del>	6
18-32 32-46	0.13	0.017			[_(_)	0.2	1.80	1.75	1.76	0.003		12.6	2.2	0.18			1	7
	0.02		1		-(a) -(a)	0.2	1.78	1.74b	1.74	5.003	4.7b	9.3	2.1	0.12			1	7
	0.02	<b>1</b>	<del>                                     </del>	1	-(s)	0.2		*1,70	** (70	ľ	7.15	7.3	1.9				<b>†</b>	7
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		Extractat	ole bases	5Bla		6Юа	Cust. Bicc	h. Cap.			 	<u> </u>			8D3		Base sat	urati
	6112a	602a	6P2a	692a			5A3a		1								5C3	50
Depth (In.)	Ca	Mg	Na	К	Sum	Ext. Acidity	Sum Cations	MEN _I OAc	į				3		Ca/Mg		Sum Cations	'
~ -		10.0	1 +	0.3	meq/100 g 4,2		6.1	4.6	<u> </u>								69 Pct.	ŀ
0-6 6-10	3.0	0.9	tr	0.3	7.1	1.9 2.9	10.0	7.7		l					4.2		71	
	5.5 5.8	1.4	tr	0.3	7.8	1.9	9.4	7.8			1				4.1		έō	
LO-18 L8-32	4.7	1.5	tr tr	0.3	7. <b>5</b>	1.8	8.3	6.3	<b></b>	ł	<del>                                     </del>	<del>                                     </del>		<del>                                     </del>	3.1		78	1
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92-40 16-61	3.0	0.9	l <u>-</u>	0.2	4.1	0.8	4.9	4.0	1	l							84	ī
61-76	2.6	0.8	-	0.2	3.6	1.1	4.7	3.5			T T		· ·				77	ī
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		Iron 0.04	0.45															
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0-6 6-10 10-18 18-32	0.82 0.75	0.04 0.03 0.03	0.45 0.36 0.39 0.39			:												
0-6 6-10 10-18 18-32 32-46	0.82 0.75 0.83 0.77 0.78	0.04 0.03 0.03 0.02 0.04	0.45 0.36 0.39 0.39 0.41															
0-6 6-10 10-18 18-32	0.82 0.75 0.63 0.77	0.04 0.03 0.03	0.45 0.36 0.39 0.39															

Soil Type: Wulesburg loamy sand

Soil Nos.: 863Colo-58-4

Location: 858 feet east, 50 feet south of northwest corner, Sec. 35, TlOW, R47W, Sedgwick County, Colorado. Climate: Continental climate, average annual precipitation of 17.5 inches, frost-free season of 147 days, mean

annual temperature of 49.6 degrees F.

Elevation: 3,900 feet Vegetation: Cultivated

Parent Material: Acolian sands Physiographic Position: Upland

Relief: Convex, 3 percent southwest facing slope

Drainage: Well drained

Moisture: Moist to 10 inches, dry below

Salt or Alkali: None

Erosion: Slight, primarily wind Sampled by: R. C. Accola, J. I. Brubacher, R. B. Grossman, R. Moreland, E. M. Payne, and J. L. Walker: July 9, 1963

Described by: J. I. Brubacher

Horizon and Lincoln Lab. No.

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O to 6 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) lossy sand; 18505 weak fine granular; soft dry, very friable when moist; noncalcareous; clear smooth boundary.

6 to 10 inches Gravish home (1078 5/2 dry) to year dark gravish home (1078 3/2 moist) sandy loss. ነበሮ

moist; noncalcareous; thin nearly continuous clay skins; clear smooth boundary.

10 to 18 inches. Light brownish gray (10YR 6/2 dry) to dark grayish brown (10YR 4/2 moist) sandy loam; 18507 weak medium prismatic breaking to weak medium subangular blocky structure; slightly hard dry, friable when moist; noncalcareous; clear smooth boundary.

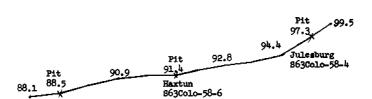
18 to 32 inches. Pale brown (10YR 6/3 dry) to dark brown (10YR 4/3 moist) sandy loam; massive breaking 18508 to weak medium subangular blocky structure; slightly hard dry, friable when moist; noncalcareous; clear smooth boundary.

32 to 46 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) loamy sand; massiv=; moft dry, 18509 very friable when moist; noncalcareous; clear smooth boundary.

46 to 61 inches. Very pale brown (10TR 7/3 dry) to brown (10TR 5/3 moist) loamy sand; massive; soft C2 18510 dry, very friable when moist; noncalcareous; clear smooth boundary.

61 to 76 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) loamy sand; massive; soft 18511 dry, very friable when moist; noncalcareous.

## Landscape Profile:



Soil Type: Keith silt loam Soil Nos.: 863Colo-58-11

Location: 940 feet north, 526 feet west of southeast corner, Sec. 11, TIOM, RASW, Sedgwick County, Colorado Climate: Continental climate, average annual precipitation of 17.5 inches, frost-free season of 147 days, mean

annual temperature of 49.6 degrees F.

Elevation: 3,800 feet Vegetation: Cultivated Parent Material: Loss

Physiographic Position: Upland Relief: Concave, 1.5 percent slope

Drainage: Well drained Moisture: Moist to 23 inches, nearly dry below

Salt or Alkali: Mone

Sampled by: R. C. Accola, J. I. Brubacher, R. B. Grossman, R. Moreland, E. M. Payne, and J. L. Walker: July 11, 1963 Described by: J. I. Brubacher

Horizon and Lincoln Lab. No.

0 to 5 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) loam; weak fine granular structure; soft dry, very friable when moist; noncalcareous; clear smooth boundary. Apl 18553

5 to 7 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) loam; moderate Ap2 18554 coarse platy structure; soft dry, very friable when moist; noncalcareous; clear smooth boundary.

7 to 11 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) loam; weak 18555 coarse prismatic breaking to weak coarse subangular blocky structure; soft dry, very friable when moist: noncalcareous: clear smooth boundary.

B21t 11 to 16 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) loam; weak medium prismatic structure breaking to weak medium subangular blocky structure; soft dry, very friable when moist; noncalcareous; very thin patchy clay skins; clear smooth boundary. 18556

16 to 23 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) heavy loam; moderate medium prismatic breaking to moderate medium subangular blocky structure; soft dry, very friable when moist; noncalcareous; thin continuous clay skins; clear smooth boundary. B22t 18557

23 to 27 inches. Light brownish gray (10YR 6/2 dry) to dark grayish brown (10YR 4/2 moist) loam; weak ВЗса medium prismatic structure breaking to weak medium subangular blocky structure; soft dry, very friable 18558 when moist; slightly calcareous; clear smooth boundary.

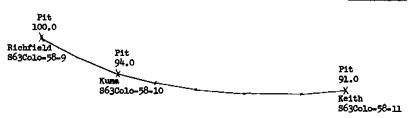
Clca 27 to 38 inches. Light gray (10YR 7/2 dry) to grayish brown (10YR 5/2 moist) loam; massive to weak 18559 coarse prismatic structure; soft dry, very friable when moist; highly calcareous; clear smooth boundary.

38 to 54 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) very fine sandy loam; massive; IIC2ca 18560 soft dry, very friable when moist; highly calcareous; clear smooth boundary.

54 to 72 inches. Very pale brown (10TR 7/3 dry) to brown (10TR 5/3 moist) very fine sandy losm; massive; 18561 soft dry, very friable when moist; highly calcareous; clear smooth boundary.

Landscape Profile:

Horizontal Scale: 200 feet 10 feet Vertical Scale:



Bureau of Public Roads Samples: Apl, B22t, and Clea horizons.

Mineralogy (Methods 7Al, 7A2): Apl, B22t, B3ca, and IIC2ca horizons. Small amounts of kaolinite and mica (or illite) are present in the coarse clay (0.2-2µ) throughout the profile. The crystalline quality decreases in the lower lithic zone. Montmorillonite increases steadily from a small amount in the surface to an abundant amount in the E3ca, then decreases to a moderate amount in the IIC2ca. The fine clay is X-ray amorphous in the surface and below the lithic contact. A small amount of montaorillonite is present in the E22t and a little more in the E3ca. The crystalline quality is poor. A large proportion of X-ray amorphous material is present, especially in the fine clay. Some of this may be closely associated with montmortllonite.

Mineralogy (Method 7H1): AB horizon. Count on very fine sand: 40 percent quartz; 40 percent feldspar; 10 percent compound grains; 10 percent glass shards; accessories include green hornblende; mica group; epidote, garnet, pyroxene group. Orthoclase and albite are common feldspars with a lesser proportion of oligoclase-andesine and some microcline. Compound grains include both altered microcrystalline feldspar and highly altered glass shards.

IMEca horizon: 30 percent quartz; 35 percent feldspar; 15 percent compound grains; 15 percent glass shards; accessories include as described for AB plus occasional grains of primary carbonate, and a very few apatite grains. Many of the glass shards show alteration, perhaps a higher proportion than in AB.

*Kettle sandy loam SOIL Nos. 863Colo-18-1 LOCATION Douglas County, Colorado SOIL _

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. <u>18638-18646</u> March 1967

			Total					Size clas	s and parti	icle diamete Sil		3A1		0475		h40 c		
		<u> </u>	Iotai							SII				3 <b>A1</b> b			rse fragme	ints C
Depth	Horizon	Sand	Silt	Clay	Very	Coarse	Medium	Fine	Very fine		Int. 🎞	Int, 🎞				3B1 > 2	3B2 > 2	1
(ln.)		(2-0.05)	(0.05 <del>-</del> 0.002)	(< 0.002)	(2-1)	(1-0.5)	(0.5-0.25)	(0.25-0.1)	(0.1-0.05)	0.05-0.02	(0.02-	(0.2-0.02)	(2-0.1)	<0.0002		(< 19)	(v.i.	J
			0.002)	1			. of << 2		·		0.002)	, <u> </u>				Pct.	Pet.	1
2-0	01					_	ł				f					7		
0-3	Al	71.0	22.2	6.8	18.0	18.2	10.5	15.7	8.6	11.9	10.3	28.4	62.4			27	17	
3-8	A21	75.0	18.8	6.2	21.9	20.1	10.5	15.1	7.4	9.5 6.7	9.3 5.1	24.3	67.6	ļ		32	20	
8-20 20-38	A22	84.0 64.8	11.8 16.2	4.2 19.0	24.0 16.0	23.5 11.9	12.8 7.0	17.4 16.8	6.3	8.7	3.7	21.1	77.7			35 23	23 14	
38-46	B21t B22t	48.4	25.7	25.9	6.1	6.6	4.4	14.2	13.1 17.1	14.6	7.5	31.9 40.5	51.7 31.3			₹3   7	14	
46-60	C	77.7	10.4	<u>11.5</u>	14.4	14.2	10.7	25.0	13.4	6.8	3.6	34.8	64.3	7.1		41	28	├
20-38	a	74.8	12.0	13.2	21.3	15.8	9.0	17.9	10.8	6.9	5.1	27.6	64.0	6.5		35	-"	
20-38	<del>¯</del>	42,4	26.0	31.6	6.9	5.4	3.8	13.1	13.2	12.6	13.4	34.1	29.2	17.3		Ĭ ŝ		1
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	6Ala	6Bla		602a	<u> </u>		,	Bulk densit	<u>.                                    </u>	4D1		ater conte	nt	<del></del>			pH	<del></del>
				Ext.	L	4Ala	4Alg	4Alg	4Alb	722	4B4	4Blc	4192	402			Τ "	8ci
Depth (Iп.)	Organic carbon	Nitrogen	Ç/N	Iron	Carbonate as CaCO ₂		1/10-	1/10-	Air			1/10-	15-	1/10-to			1	
()	<u>a</u>	1	1	8.8	as cacog	State		Bar	Dry	COLE	State		Bar	15-Bar	1		1	(1:1
		1	}	Fe			<u>€</u> g/cc	ł	· ·								1	
	Pct.	Pct.		Pct.	Pct.	g/cc	g/cc	g/cc	g/cc	ļ	Pct.	Pct.	Pct.	in/in.			<u>.</u>	<u> </u>
2-0	19.4	1.20	16			- 1.0		1.0					۔ ۔	0.36			1	۱.,
0-3 3-8	0.68	0.117		0.2		1.48	1.21	1.46	1.47	0.002	9.3	18.1 16.6	5.0 3.7	0.16		1	1	6.6
8-20	0.23	0.020	14	0.1	-	1.55	1.16	1.50	1.51	0.002	4.1	10.1	2.4	0.09			1	6.3
20-38	0.20	0.0.0		0.2		1.57	1.27	1.48	1.55	0.015	6.7	18.3	6.9	0.15		1	1	6.5
38-46	0.50			0.2		1.56	1.391		1.57	0.027	7.7	20.3		0.14h				6.6
46-60	0.08	1		0.1		1.54	1.07	1.48	1.53	0.007	4.3	18.7	4.6	0.15				6.0
20-38	0.17	1		0.1		,							4.7					6.1
20-38	0.28	<u> </u>	ļ	0.3									10.3	-			1	6.1
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	<u> </u>	1	<u> </u>		<u> </u>	(TD -	6-4 T	1 4							8D3		   D	<u> </u>
	6182a.	Extractab 602a	6P2a	5Bla 692a		6HLA	Cett.Ext	SALA							003		Base sat	5C1
Depth	ONCH	CUEB	OFZE.	Owner		Ext.	Sum	)^~ <b></b>		İ							Sum	J 703
(in.)	Ca	Mg	Na	ĸ	Sum	Action to		NH,OAC							Ca/Mg		Ontions	MEE, C
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					meq/100 £		,		<b></b>	<b></b>							Pct.	Pct.
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0-3	5.9	1.4	tr	0.4	7.7	5.1 2.1	12.8 7.8	9.4	i			]			4.2		60 73	82 99
3-8 8-20	2.3	0.6	tr tr	0.4	5.7 3.1	1.3	4.4	3.0		<b> </b>		<del> </del>	<del> </del>	<del>                                     </del>	<del>  *• 3</del>		70	103
20-38	9.2	2.9	0.1	0.2	12.4	1.4	13.8	11.7	1	1					3.2		90	100
20-30 38-46	13.1	4.7	0.2	0.3	18.3	1.8	20.1	16.6	1	<u> </u>		<u> </u>		L	2.8		91	108
46-60	6.2	2.5	0.1	0.1	8.9	1.0	9.9	7.8							2.5		90	177
20-38	6.2	2.3	0.1	0.2	8.8	0.8	9.6	8.1		1					2.7		92	1.09
20-38	15.3	4.5	0.1	0.3	20.2	2.4	22.6	19.3	ļ	<u> </u>	<b>_</b>	ļ		1	3.4	<u> </u>	89	109
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					L	L								<u> </u>				$\bot$
	Ratios	to Clay	y SDL			a. S	andy i	nterba	nd mat	erial,	see d	escrip	tion.					
				7	I		<b></b>	4		4		3 t						

		<u> </u>		 <u></u>	_
	Ratios	to Clay	y SDL		Γ
Depth (in.)	NH _L OAc CEC	Ext. Iron	15-Bar Water		
2-0 0-3 3 <b>-</b> 8	1.38	0.03	0.74		
8-20 20-38 38-46	0.71 0.62 0.65	0.02 0.01 0.01	0.57 0.36 0.39		
46-60 20-38 	0.66 0.61 0.61	0.01 0.01 0.01	0.39 0.36 0.33		

- b. Clayey interband material, see description.
- c. Estimated less than 10 percent by volume of coarse fragments greater
- c. Estimated less than 10 percent by volume of coarse fragments greathan 19 mm.

  d. 5 kg/m² from 0 to 60 inches (Method 6A).

  e. Calculated to include volume but not weight of 2-19 mm. material (Method 3B2).

  f. 1/3-Bar (Method 4Ald).

  g. 1/3-Bar.

  h. 1/3- to 15-Bar (Method 4C1).

Soil Type : "Kettle sandy loam

Soil Nos.

863Colo-18-1 425 feet north, 650 feet west of the southeast corner, Section 14, TlOS, R67W, Douglas County, Toostion

Colorado Climate

: Continental, average annual precipitation 20 inches, mean annual temperature 44 degrees F. Growing season 120 days. Elevation 7,200 feet.
Ponderosa pine with site index of 48, scrub oak, blue grams, wild rose, some mountain multy

and annuals Parent Material : Dawson arkose or outwash from Dawson.

Physiographic

Vegetation

Position. Upland

: Sloping 5 to 6 percent north facing. Slope about 900 feet in length. Pit dug approximately Relief

midway on the slope

Surface and internal drainage gradual. Rapid intake rate Drainage Dry throughout, usually moist 5 to 15 percent very fine gravel throughout the profile Moisture

Stoniness

Salt or Alkali Hone observed

Erosion

: R. K. Dansdill, J. B. Brown, L. G. Shields, and R. H. Jordan; August 12, 1963 : J. B. Brown Sampled by

Described by

Horison and Lincoln Tab. No.

01 18638 2 to 0 inches. Pine needles and comes, partially decomposed; abrupt smooth boundary.

AL 18639

B21 t 18642

0 to 3 inches. Black (LOYR 2/1 moist) light coarse sandy losm; very dark gray (LOYR 3.5/1 dry); weak medium subangular blocky structure; slightly hard when dry, loose when moist; few fine water washed gravels; noncalcareous; clear ways boundary.

3 to 8 inches. Dark grayish brown (10TR 4/2 moist) lossy coarse sand; light brownish gray (10TR 6/2 dry); massive structure; slightly hard when dry, loose when moist; noncalcareous; few fine A21 18640

water worn gravels; clear wavy boundary.

A22 18641 8 to 20 inches. Pale brown (10YR 6/3 moist) course sand; light gray (10YR 7/2 dry); massive structure; loose when dry or moist; noncalcareous; few fine water worn gravels; abrupt wavy boundary.

Brown (10TR 5/3 moist and crushed) sandy loam; pale brown (10TR 6/3 dry); extremely bard when dry, friable when moist; this horizon consists of horizontal bands of clay loam or sandy clay loam 1/2 to 1-1/2 inches in width that have a moderate fine angular blocky structure; the finer textured bands are separated by layers of sand 4 to 8 inches thick that are massive; the finer textured bands have clay films and organic staining; some fine gravel is mixed with the sand; noncalcareous;

clear slightly wavy boundary.

18643

38 to 46 inches. Grayish brown (2.5% 5/2 moist and crushed) coarse sandy loam; light brownish-gray (2.5% 6/2 dry); very hard when dry, friable when moist; this horizon is similar to the one above; sandy clay loam bands are 1/2 to 1 inch in width and 6 to 12 inches apart; structure is less pronounced but clay films are evident; sand coatings on the bands are not as thick in this horizon; areas between the bands are coarse loamy sand or sand; noncalcareous; gradual boundary.

46 to 60 inches. Pale yellow (2.5Y 7/4 moist) coarse sand; pale yellow (2.5Y 8/4 dry); single grain; loose when dry or moist; noncalcareous; a few bands 1/4 inch wide of sandy clay loam materials are present in this layer; the bands may be considered part of the B horizon rather than a C horizon. 18644

20 to 38 inches. Coarse textured bands. Pale brown (10TR 6/3, moist) coarse losmy sand, very pale brown (10TR 7/3, dry); this is sandier material between the heavy streaks of the B21 horizon; it was sampled separately; structure is massive; hard when dry, loose when moist. B21t 18645

20 to 38 inches. Fine textured bands. Dark brown (10YR 4/3, dry or moist) sandy clay loam; this is the heavier streaks in the B21 horizon; it is moderate to fine angular blocky with definite clay films and what appears to be organic staining; the heavier material was sampled separately for B21t 1 AKM

laboratory analysis.

Remarks: This soil unit is extensive in Douglas County. The parent material may be out-wash off of the Dawson formation or may be part of the Dawson. The banding as described in this profile is very typical of this soil unit. The coarse sandy material is often cemented and is extremely hard when dry but loose when moist. This soil unit occurs at elevations of 6,400 to 7,800 feet in the survey area. Soil temperatures at this location were 15 degrees centigrade at one foot, 14 degrees centigrade at 3 feet, 12.4 degrees centigrade at 13 feet. Very hard Dawson formation was encountered at 13

Bureau of Public Roads Samples: A22 and B21t horizons.

Observations on very fine sand (Method 781) -- Al, E22t, and C horizons: 80 to 90 percent feldspar, 10 percent

0.45

36-60

0.58

SOIL Nos. S63Colo-18-2 LOCATION Douglas County, Colorado *Kettle sandy loam SOIL _ LAB. Nos. 18647-18652 March 1967 SOIL SURVEY LABORATORY ____ Lincoln, Nebraska General Methods: 1A, 1Blb, 2A1, 2B Size class and particle diameter (mm) A2 Coarse fragments a Total Silt 382 3B) Verv Fine Int. III Horizon Sand Sift Clay Coarse Very fine Int TI Depth 3e- 2 (1–0.5) (0.5–0.25) (0.25–0.1) (0.1–0.05) (0.05–0.02) (0.02– 0.002) (0.2–0.02) (2-0.05) (0.05-( < 0.002) (2-0.1)(voi. (in.) (2-1) (< 19) Pct. 18.9 58.9 0-3 Al 69.6 23.9 6.5 15.1 9.0 15.9 10.7 12.4 31.8 27 9.7 6.3 25 75.8 21.1 18.5 9.8 16.3 10.3 65.7 A21. 20.0 4.2 10.1 29.3 15 3-9 18.5 17.2 20.1 9,2 8.9 26.5 <u>34</u> 78.6 75.8 23.7 8.0 14.3 69.4 9-17 A22 7.1 10.0 22 9.7 8.5 3.7 25.7 3.7 21.1 4.0 19.7 14.5 14.6 17.3 18.1 11.4 10.2 22 17-26 B21t 6.0 66.9 32 76.9 81.6 17.7 18.1 4.8 28 26-36 B22t 23.5 18.6 6.9 70.0 26 9.8 18.3 36-60 В3 24.2 14.6 4.6 75.2 6Ala 6Bla 4D1 **Bulk density** Water content HALE HALE HALE HALD **PLEY** 4Blc 4B2 8Cla 1,000 Organic Nitrogen Depth Field 1/10- 1/10-1/10-to 15-Bar Iron Air Field 1/10- 15carbon as CaCO_a (1:1) State Bar Bar COLE State Bar 8.5 Dry ъ Fe Pct Pct. g/cc 1.13 **E/c**0 Pct. 1.12 5.8 3.48 0.159 0.97 1.14 0.006 19.4 30.1 5.1 0.24 1.36 5.9 4.9 12.4 5.8 0.12 0.95 1.36 2.2 3-9 0.047 20 1.37 1.16 8.6 9-17 17-26 0.10 6.0 1.21 1.55 1.56 0.002 2.2 0.08 1.22 1.57 1.61 1.12d 1.51d 1.59 0.16 0.005 6.2 11.4 4.8 0.08 6.0 11.0e 6.0 12.4 4.4 1.56 0.013 7.7 6.0 26-36 36-60 0.08 0.06f 1.09 1.49 1.49 0.12 0.09 6.0 6HLA Cat.Exch.Cap. Base saturation 8D3 Extractable bases 5Bla 5A3a 5C3 5C1 6N2a 600a 6P2a 6Q2a 5Ala Deoth Ext. Sum Sam (in.) Ca/Mg Ca Na Sum Actitity Cations NR₄OAc Cattlema Ei_LOA: Pct. 6.4 61 84 0.4 12.3 8.0 20.3 14.7 10.3 0 - 3lı .6 7.7 4.1 8.2 61 87 5.4 3.8 0.2 4.7 3.0 3-9 0.7 76 100 9-17 0.7 0.3 3.1 1.0 3.1 2.6 76 17-26 4.5 tr 6.2 2.0 6.5 95 9.8 ġο 100 26-36 5.5 2.2 tr 0.3 8.0 1.8 8.0 2.5 102 5.8 36-60 Ratios to Clay Estimated less than 10 percent by volume of coarse fragments greater than 19 mm. 6 kg/m² from 0-60 inches (Method 6A). Depth NH_LOAc CEC 15-Bar ъ. (in.) Calculated to include volume but not weight of 2-19 mm. material Water (Method 3E2). 1/3-Bar (Method 4Ald). d. 2.26 0.78 1/3-Bar. 0-3 e. 1.29 0.52 3-9 f. 1/3- to 15-Bar (Method 4C1). 0.44 9-17 0.31 0.45 0.33 17-26 0.41 26-36 0.55

Soil Type

*Kettle sandy loam

Soil Nos.

863Colo-18-2

Location

550 feet west, 150 feet north of the southeast corner of Section 34, TlOS, R66W, Douglas County,

Colorado

Climate Vecetation Continental, average annual precipitation 20 inches, mean annual temperature 44 degrees Growing

season 120 days. Elevation 7,250 feet

<u>Ponderosa pipe. with a site index of 62: older stand with under-story of some mountain mully.</u>

**F**r. .... ____

Parent Material : Dawson arkose or outwash from Dawson

Physiographic

Position

Relief

: Unland : Sloping, 5 percent northwest facing slope. Slope about 300 feet in length; pit dug near the base

of the slope Drainage Surface and internal drainage gradual; rapid intake rate

Moistaire

Dry throughout, usually moist 5 to 15 percent fine gravel throughout this profile Stoniness

Mone observed

Slight to none

Salt or Alkali

Erneion

Sampled by

R. K. Dansdill, J. B. Brown, R. H. Jordan, and L. G. Shields; August 12, 1963 Described by J. B. Brown

Horizon and Lincoln

Lab. No.

1 to 0 inches. Pine needles and cones, partially decomposed; abrupt smooth boundary.

18647

01

0 to 3 inches. Black (LOTR 2/1 moist) coarse loamy sand; dark gray (LOTR 4/1 dry); week coarse subansular blocky atmichira: loose when dry or moist: noncalcareous:

clear wavy boundary.

A21 18648 3 to 9 inches. Dark gray (10TR 4/1 moist) losmy sand; gray (10TR 6/1 dry); massive structure; loose when dry or moist; noncelcareous; few fine water worn gravels; clear slightly wavy boundary.

A22 9 to 17 inches. Light gray (10YR 7/2 moist) sand; white (10YR 8/1 dry); massive structure; loose 18649 when dry or moist; noncalcareous; some fine gravels; abrupt wavy boundary.

B21t 17 to 26 inches. Pale brown (10TR 6/3 moist) coarse loamy sand; very pale brown (10TR 7/3 dry); 18650 moderate medium to coarse angular and subangular blocks; extremely hard when dry, loose when moist; noncalcareous; thin nearly continuous clay films; bands of coarse sandy loam 1/4 to 1 inch thick with structure and clay films are common; massive coarse sand or gravelly sand 1 to 2 inches thick separate the finer textured bands; color of the coarse sandy loam layer is brown (10YR 5/3 moist or dry); gradual smooth boundary.

B22t 26 to 36 inches. Fale brown (10YR 6/3 moist) coarse sandy loam; very pale brown (10YR 7/3 dry); 18651 moderate medium angular and subangular blocky structure; extremely hard when dry, very friable when moist; nonceleareous; thin patchy clay films; coarse sandy clay loam bands 1/2 to 2 inches thick and 2 to 4 inches spart are common; between these layers are coarse sand or gravelly sand materials; color of the sandy clay loam material is brown (10YR 5/3 moist or dry).

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE SCS-421 10-64 *Kettle sandy loam, SOIL Nos. S63Colo-18-9 LOCATION Douglas County, Colorado thick surface phase SOIL _ LAB. Nos. _____18653-18661 SOIL SURVEY LABORATORY Lincoln, Mebraska March 1967 General Methods: 1A, 1B1b, 2A1, 2B Size class and particle diameter (mm) 3A1 Total 2A2 Coarse fragments b 3A1b 3B1 3B2 > 2 > 2 (< 19)(Vol. Very coarse (2-1) Silt Clay Coarse Medium Fine Very fine Int. III Int. 🎞 Sand Depth (in.) Horizon (2-0.05) (0.05-0.002) (< 0.002) (1-0.5) (0.5-0.25) (0.25-0.1) (0.1-0.05) (0.05-0.02) (0.02-0.02) (0.2-0.02) (2-0.1)

*Kettle sandy loam, thick surface phase Soil Type 863Colo-18-9 Soil Nos.

1,320 feet west, 85 feet north of the east quarter corner of Section 28, T108, R66W, Douglas Location County, Colorado

Climate

Continental, average annual precipitation 20 inches, mean annual temperature 44 degrees E Growing season 120 days. Elevation 7,200 feet Vegetation : Mative pasture; mountain muhly, blue grama, western wheat grass, gamble oak and mountain mahogamy Parent Material : Dawson arkoze or outwash from the Dawson

Physiographic

: Sloping, 8 percent west facing slope. Slope about 200 feet long; grades toward small drainage-Relief

way with pit near the base of the slope:
Surface drainage rapid; internal drainage rapid to 3 feet, extremely slow below 3 feet. Intake Drainage

rate rapid

Moist to 16 inches, dry below; usually moist throughout Moisture

Fine gravel throughout, increasing below 16 inches; mainly feldspar and quarts that have been Stoniness

rounded Salt or Alkali : None observed.

Slight to none

R. K. Dansdill, J. B. Brown, R. H. Jordan, and L. G. Shields; August 16, 1963 : J. B. Brown Sampled by

Described by

Horizon and Lincoln Lab. No.

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0 to 6 inches. Black (10TR 2/1 moist) light sandy loam; dark grayish brown (10TR 4/2 dry); weak fine granular structure; slightly hard when dry, very friable to loose when moist; noncalcareous; few fine water worn gravels; clear wavy boundary. A1 18653

6 to 11 inches. Very dark gray (10YR 3/1 moist and mixed) losmy sand; this horizon is a mixture of light and dark bands 2 to 6 inches wide; the dark bands are (10YR 2/1 moist) and (10YR 4/1 dry); the light bands are (10YR 6/2 dry) and (10YR 4/2 moist); massive structure; loose when dry or moist; noncalcareous; few fine water worn gravels; clear smooth boundary. A1842 18654

11 to 16 inches. Grayish brown (10YR 5/2 moist) loamy sand; light grey (10YR 7/2 dry); massive structure; loose when dry or moist; noncalcareous; some fine water worn gravel; abrupt smooth 18655

boundary.

***** 

B2&A2 16 to 19 inches. Light brownish gray (10YR 6/2 moist and crushed) gravelly sandy loam; light gray (10TR 7/2 dry); moderate medium to fine subangular blocky structure; very hard when dry, firm when moist; noncalcareous; thin patchy clay films on ped surfaces; this horizon consists of sandy clay 18656 loam nodules with coats of sand from the A2 horizon on the outside; colors in the pit indicate this may be a B2ir horizon; clear smooth boundary.

B21± 19 to 24 inches. Light brownish grav (107R 6/2 moist and crushed) gravelly clay loam: dark gravish SCS-421 10-64 SOIL CONSERVATION SERVICE Kuma loam SOIL Nos. 863Colo-58-7 LOCATION Sedawick County, Colorado SOIL SOIL SURVEY LABORATORY Lincoln, Mebraska LAB. Nos. 18562-18570 March 1967 General Methods: 1A, 1Blb, 2A1, 2B Size class and particle diameter (mm) Coarse fragments 2A2 Total Silt Silt Fine Depth Horizon Sand Clay Coarse Very fine Int. III let. II **>** 2 2 - 19 19-76 (1-0.5) (0.5-0.25) (0.25-0.1) (0.1-0.05) (0.05-0.02) (0.02-0.02) (0.2-0.02) (2-0.1) (0.05<u>–</u> (0.002) (2-0.05)( < 0.002) (2-1)(< 19) Pct < 76mm 19.6 24.3 2.6 25.6 25.0 54.8 2.9 0.6 3.7 3.7 15.8 14.3 32.4 31.3 22.4 50.2 9.8 47.6 10.7 9.8 B21t 6-11 50.7 49.0 1.0 3.3 2.7 19.4 tr 26.7 3.9 4.3 R224 24.3 11-16 4.5 3.3 11.3 30.1 18.9 43.4 13.0 38.8 16.5 40.8 13.1 16-22 121th 27.5 27.8 6.1 11.0 25.6 19.1 2 4.7 12.0 22-29 B22tb 25.1 45.9 29.0 1.5 3.3 3.6 26.9 19.0 2 29-34 **B3**b 21.8 50.0 28.2 1.2 3.Ò ž.i Ž.1 13.4 30.2 19.8 44.8 8.4 tr 34-44 Cicab 31.46 17.3 3.9 52.0 12.1 51.3 1.4 3.0 24.8 3.8 19.3 30.6 20.7 5 IIC2cab 89.4 11.6 85.0 20.3 45.5 44-52 4.3 13.4 33.5 13.3 12.8 6.3 2.7 1.6 26 52-84 10.8 8.0 IIIB2cab 54.8e 37.2 9.2 12.7 9.3 3.3 6Ala 6Bla μm Carbonate **Bulk density** Water content Ert. 4Ala 4Ald Iron Field 1/3-HAID as CaCO3 4B4 4B1c 4B2 4C1 Field 8стр 8Cla Nitrogen Organic C/N Depth 6E1b 3Ala Air Field 1/3-15-1/3- to Capa-Sat. carbon b (ln.) (1:1) 6**E2a** <0.002 15-Bar as State Bar Dry COLE State Bar Bar city Paste <23 mm. Pe đ Pct. Pet. Pct Pct Pet Pct Pct. Pct. 26.4 0.010 23.8 0.024 20.2 23.1 10.2 24.8 11.4 0-6 1.40 0.1341.24 1.24 1.28 0.16 6.4 8 6-11 0.74 0.089 1.30 1.26 1.36 26.1 6.7 0.17 11-16 0.74 0.080 ·(a) 12.9 24.6 7.0 16-22 0.089 <u>10</u> -(s) -(s) 0.036 10.2 12.8 23.2 7.1 22-29 0.98 10 **13.5** 0.094 1.3e 22.8 7.3 29-34 34-44 0.60 0.070 0.024 10.8 0.014 8.5 13.0 24.6 tr(s) 25.3 7.7 0.34 21.9 26.0 8.3 10.1 3 tr 0.16جو علياً 0.03 tr 3.1 17.2 8.5 0.02 tr 8.0 8Ala 8D3 6Щ. Extractable bases 5**Bla** Cat. Engh. Cap. RΔ El ec 503 6102a 602a 6P2a 692a 5A3a 5Ala later 5C1 Depth Ext. at Cond Bum (In.) Ca Mg Na ĸ Sum Activity Detaces Bata-Ca/Ng Cetton a,ch ration Pet. Pct 5.7 4.4 9.8 2.6 14.9 20.6 15.7 95 98 0.6 3.8 72 80 6-11 12.1 3.4 0.1 17.2 21.6 17.5 3.6 0.1 84 <u> 103</u> <u> 11-16</u> 2.9 16-22 4.9 0.1 22.9 89 16.0 1.9 3.3 110 22-29 16.8 5.5 0.1 2.3 24.7 26.9 22.3 3.1 92 25.6 29-34 34-44 0.2 23.1 47.0 0.68 16.4 e 6.3£ 2.7 2.6 5.6f 1.3f 2.6 13.5 e 0.5 22.2 18.8 2.4 3.8 e 44-52 0.2 0.6 5.9 5.1 2.9 52-84 30.8 20.0 e 6.6£ 1.5 2.7 26.0 3.0

7/10/63. On 7/12/63 a pit was dug that cut across the interior square;

....

Depth

0-6

Ratios to Clay 8DL

Bet.

Iron

15-Bar

Water

0.52

MHL OAC

CODEC

0.80

0.72

Trace of carbonate grains (1-0.05 mm.).

11 kg/m² to 44 inches (Method 6A). . ъ.

^{¢.} Estimated.

Field capacity estimates: A spade-width ditch about 6 inches deep was dng around a 3x3 foot square and the soil banked up to the outside to form a dam. About 200 gallons of water were applied the morning of

Soil Type: Kuma loam

Soil Nos: 863Colo-58-7

Location: 680 feet east, 135 feet north of south quarter corner, Sec. 19, Tion, Rulw, Sedgwick County, Colorado Climate: Contanental climate, average annual precipitation of 17.5 inches, frost-free season of 147 days, mean

annual temperature of 49.6 degrees F.

Elevation: 3,800 feet Vegetation: Grass

Parent Material; Loess Physiographic Position: Upland Relief: 1 percent slope

Drainage: Well drained Moisture: Noist to 20 inches, nearly dry below

Salt or Alkali: Mone

Erosion: Slight

Sampled by: R. C. Accola, J. I. Brubacher, R. B. Grossman, R. Moreland, B. M. Payne, and J. L. Walker: July 10, 1963 Described by: J. I. Brubacher

Horizon and Lincoln Lab. No.

B22tb

1866

0 to 6 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) and very dark AD 18562 brown (10TR 2/2 crushed) loam; weak fine granular structure; soft dry, very friable when moist; noncalcareous; clear smooth boundary. Weak fine platy structure in lower 2 inches.

6 to 11 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) loam; weak coarse prismatic breaking to weak medium subangular blocky structure; hard dry, friable when moist; 18563 noncalcareous; clear smooth boundary.

11 to 16 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) and very dark brown (10TR 2/2 crushed) clsy loam; moderate medium prismatic breaking to moderate fine subangular blocky structure; slightly hard dry, friable when moist; noncalcareous; thin patchy clay skins; clear smooth boundary; streaks of very dark brown (10TR 2/2 moist) color; clear smooth boundary. 18564

16 to 22 inches. Dark gray (10YR 4/1 dry) to black (10YR 2/1 moist) clay loam; strong medium prismatic breaking to strong fine subangular blocky structure; slightly hard dry, friable when moist; noncalcareous; thin continuous clay skins; clear smooth boundary. 18565

22 to 29 inches. Dark gray (10YR 4/1 dry) to black (10YR 2/1 moist) clay loam; strong medium prismatic hreat for to strong fine

clear smooth boundary.

29 to 34 inches. Light brownish gray (10YR 6/2 dry) to dark grayish brown (10YR 4/2 moist) loam; moderate 18567 medium prismatic breaking to moderate medium subangular blocky structure; slightly hard dry, very friable when moist; noncalcareous; 10 percent of horizon has streaks of very dark grayish brown (10YR 3/2 moist) color; clear smooth boundary.

Clcab 34 to 44 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) loam; weak medium prismatic 18568 bresking to weak medium subangular blocky structure; slightly hard dry, very friable when moist; highly calcareous; clear smooth boundary.

IIC2cab 44 to 52 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) coarse sand and gravel; single grain structure; loose dry and moist; slightly calcareous; 30 percent fine gravels; clear wavy 18569 boundary.

52 to 84 inches. Dark brown (7.5YR 4/4 dry) to brown (7.5YR 5/4 moist) sandy clay losm; weak coarse prismatic breaking to weak coarse subangular blocky structure; slightly hard dry, friable when moist; slightly calcareous with a horizontal 2-inch lime streak at 66 inches; clear wavy boundary. IIIB2cab 18570

84 to 124 inches. Dark brown (7.5YR 4/4 dry) to brown (7.5YR 5/4 moist) sandy loam; massive; slightly hard dry, friable when moist; noncalcareous. IIIB3b

Landscape Profile:

Pit 100.5 97.7 Richfield \$63¢o1o-58-8

85.7

90.1

84.0 Pit

81.2 82.0

SOIL Nos. S63Colo-58-10 LOCATION Sedgwick County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska
General Methods: 1A, 1Blb, 2A1, 2B

__ LAB. Nos. <u>18571-18580 March 1967</u>

	l Method	8: JA	, 1Blb	, ZAI,	28													
	ł								s and parti	cle diamete		3A1.		1				
	ł	ļ <u>.</u>	Total					Sand		Si	lt			ЗА1Ъ	3Ala	Coa	rse fragme	nts 2
Depth	Horizon	Sand	Sift	Clay	Very	Coarse	Medium	Fine	Very fine	}	Int. III	int. 🎞			Noncar-	l		١,,
(In.)		(2-0.05)	(0.05-	(< 0.002)	coarse (2-1)	(1-0.5)	(0.5-0.25)	(0.25-0.1)	(0.1-0.05)	0.05-0.02	(0.02-	(0.2-0.02)	(2-0.1)	<0.0002	bonate	> 2 (< 19)	2 - 19	19-
		<u> </u>	0.002)	1	(2-1)	l	l '		l,		0.002)	,	(= 0.0)		Clay		PC	t. of _
	A 7	3F 0	144.4	120 #	1 a 3.		1. of -< 2		126 =	10- 7	57.0	100				Pct.	7	6mm
0-5 5 <b>-</b> 7	Apl Ap2	35.9 33.4	44.0	19.7 22.6	1.4	4.9 4.8	4.9 4.5	8.0	16.7	27.6 28.8	16.8	48.6	19.2	ľ	20	tr		
7-13	B2t	24.5	46.8	28.7	0.7	2.9	2.8	7.0	15.9		15.2	48.4 42.9	17.5 11.4	30.0	23	tr		
13-24	B21tb	20.8	47.8	31.4	0.6	2.0	2.2	5.0	13.1	27.1	19.7 21.8	40.2	11.4	19.9	29	tr		<u> </u>
24-31	B22tb	21.7	50.2	28.1	0.6	2.0		3.7	12.3				8.5		31	tr		ł
31-40							1.9	3.2	14.0	28.3	21.9	44.1	7.7	9.2	28	tr		ł
40-47	B3cab	22.9	55.4	21.7 16.4	0.5	1.5	1.7	3.0	16.2	32.0	23.4	49.7	6.7		22	tr		1
	Clcab	36.9	46.7	10.4	1.6	4.3	4.2	6.8	20.0	28.6	18.1	52.2	16.9		16	1		1
47-51	C2cab	46.7	36.9	16.4	2.1	6.8	6.9	11.4	19.5	23.1	13.8	48.5	27.2		16	5		1
51-69			14.1	19.2	4.4	10.6	12.6	22.4	16.7	6.7	7.4	35.3	50.0	9.4	17			1
69-85	IIC4cab	69.8	14.3	15.9	4.3	13.5	13.9	22.3	15.8	6.5	7.8	34.0	54.0		15	4		1
	Ì	]					1		l	[								l
.,	CATA	677.	<del></del>	0-2		600		Bulk densit	<u>.                                    </u>	Lan	10			<u> </u>				
	6Ala	6Bla	ŀ	as C	onate CO2	602a	14Ala	4Ald	4Alb	4D1	4B4	ater conte		4C1	1	<u> </u>	pH	100
Depth	Organic	Nitrogen	C/N	6 <b>E</b> 1.b	3Ala					COLE			482			1	8с1ъ	80
(in.)	carbon	l	Ì	682a	<0.002		Field		Air	COME	Field		15-	1/3-to			Sat.	(1:
	<u>b</u>	1	ŧ	OE≥a. < 2 mm			State	Bar	Dry		State	Bar	Bar	15-Bar			Paste	1
	Pct.	Pct.			mm. Pet.	Fe	g/cc				Pct.		6.4			l		l
0-5	1.20	0.115	10	Pct.	rci.	Pot.	1.12e	g/cc 1.Od	g/cc	<b></b>	PCL.	Pct.	9.4	in/in.				-
		0.105		ŀ		0.5	1.40		3 1	. ~~	المصار					İ		6.
5-7	0.93 0.66	0.082	9	1.		0.5		1.36	1.47	0.028		21.1	10.2	0.15				6.
7-13			11	-(8)		0.5	1.34	1.28	1.42			22.4	12.7	0.12				6.
13-24 24-31	1.14 0.83	0.108	10	-(a)		0.5	1.33	1.26	1.38	0.032	72.7	24.3	14.6	0.12		ļ		7.
		0.000	70	tr(s)		0.5		1.3d 1.32		۰			13.6				ا ہے ا	7.
40-47	0.53			4	tr	0.4	1.34		1.36	0.010		21.6	15.3	0,12			7.6	8.
	0.32				tr		1.34	1.33	1.36	0.007	11.9	18.8	9.6	0.12		l		8.
	0.28	ŀ		3	tr	0.3		1.34				_1	8.6	امددا				8.
<u>51-69</u>	0.04			12	2	0.2	1.55	1.52	1.50	0.010	12.1	14.3	9.3	0.08		<u> </u>		8.
69 <b>-8</b> 5	0.04			10	1	0.2							7.5					8.
	-	Extractab	le bases	5Bla		6HLa	Out.Ex	hCap.	<u> </u>		8A	8Ala		<u> </u>	8p3		Base sati	i uratio
	6 <b>112a</b> .	602a	6P2a	602a			5A3a	5Ala			Water	Elec.		]			5C3	5C
Depth	1			l .		Ext.	Sym	l			at	Cond.					Sum	<u> </u>
(in.)	Ce	Mg	N≱	K	Sum	Acted by	Cartions	MELL CAC	}		Satu-				Ca/Mg	ŀ	Cetions	NEET!
					į į		}	l '	ļ	İ	ration							1
	-				meq/100 g			-			Pet.	m boém					Pct.	Pc
0-5	9.9	2.5	tr	1.9	14.3	5.0	19.3	15.1							4.0		74	9
5-7	11.5	3.1	tr	1.9	16.š	3.9	20.4	16.3			i				3.7		81.	10
<b>7-13</b>	15.2	4.4	0.1	1.8	21.5	3.0	24.5	21.0			L			L !	3.5	L	88	10
13-24				2.3		2.2	30.5	25.9							3.4		93	10
24-31	18.4 e		0.1	2.7	27.9		آ آ	26.2			<b>l</b> .			1	2.7		1	۳.
			0.3		25.1		l .	21.9	l		45.0	0.57		[	2.5			l
31-40			0.4	2.4	20.2			17.7							2.5			
31-40	UZ.4 6					I	I	15.4	i	ł	l				2.6			1
31 <u>-40</u> 40-47	12.4 e	4.42	10.5	12.1	110.3		1	117.4										
31 <u>-40</u> 40-47 47-51	11.3 e			2.1	18.3 15.0		l											İ
31-40 40-47 47-51 51-69 69-85	11.3 e 9.1 e	3.6¢	0.5 0.7 0.7	2.1 1.6 1.3	15.0 12.7			13.3 11.1							2.5			-

	_1					
	Ratio	s to C		Ĺ		Γ
Depth (In.)	SD2 NHhOAc		801 15-Bar		! 	a. b.
(111.7	ČEC	Iron	Water			c.
2.5	D 7/	0.03	0.48			e.
0-5	0.76				l	f.
5- <b>7</b>	0.71		0.45		l	ŀ
7-13	0.72	0.02	0.44			
13-24	0.84	0.02				1
24-31	0.94	0.02	0.48			l
3140	1.00	0.02	0.57		t	
31-40 40-47	1.11	0.03	0.59			Ī
47-51	0.96	0.02	0.52	1	ļ	l
51-69	0.78	0.03	0.48			
69-85	0.74	0.01	0.47			
	'			ł		

a. Few carbonate grains below 31 inches.
b. 12 kg/m² to 60 inches (Method 6A).
c. One clod.
l. Estimated.
c. NELC-EtoH extraction (Method 6N3m).
c. NELC-EtoH extraction (Method 603m).

Soil Type: Kuma loam Soil Nos.: \$63Colo-58-10

Location: 1,320 feet west, 792 feet north of southeast corner, Sec. 11, TlON, R45W, Sedgwick County, Colorado Climate: Continental climate, average annual precipitation of 17.5 inches, frost-free season of 147 days, mean annual temperature of 49.6 degrees F.

Elevation: 3,800 feet Vegetation: Cultivated Parent Material: Losss Physiographic Position: Upland Relief: 2 percent slope Drainage: Well drained Moisture: Moist to 20 inches, dry below

Salt or Alkali: Home

Erosion: Slight

Sampled by: R. C. Accola, J. I. Brubacher, R. B. Grossman, R. Moreland, E. M. Payne, and J. L. Walker: July 11, 1963 Described by: J. I. Brubacher

Horison and Lincoln Lab. No.

0 to 5 inches. Grayish brown (10TR 5/2 dry) to very dark brown (10TR 2/2 moist) losm; weak fine granular Apl 18571 structure; soft dry, very friable when moist; noncalcareous; clear smooth boundary.

5 to 7 inches. Dark grayish brown (10YR 4/2 dry) to very dark brown (10YR 2/2 moist) loam; weak coarse Ap2 18572 platy structure; hard dry, frisble when moist; noncalcareous; clear smooth boundary.

7 to 13 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) clay losm; 18573 moderate medium prismatic breaking to moderate medium subangular blocky structure; slightly hard dry, friable when moist; noncalcareous; very thin patchy clay skins; clear amouth boundary.

B21tb 13 to 24 inches. Dark gray (10TR 4/1 dry) to black (10TR 2/1 moist) silty clay loam; moderate medium 18574 prismatic breaking to moderate, medium subangular blocky structure; slightly hard dry, very friable when moist; noncalcareous; thin continuous clay skins; clear smooth boundary.

24 to 31 inches. Dark gray (10TR 4/1 dry) to black (10TR 2/1 moist) loam; moderate medium prismatic breaking to weak moderate medium subangular blocky structure; slightly hard dry, very friable when moist; noncalcareous; streaks of dark grayish brown (10TR 4/2 moist) colors in 10 percent of horizon; clear B22tb 18575 smooth boundary.

31 to 40 inches. Light brownish gray (10YR 6/2 dry) to dark grayish brown (10YR 4/2 moist) loam; weak moderate medium prismatic breaking to weak, moderate medium subangular blocky structure; slightly hard B3cab 18576 dry, very friable when moist; highly calcareous; clear smooth boundary.

40 to 47 inches. Pale brown (10TR 6/3 dry) to dark grayish brown (10TR 4/2 moist) loam; massive; slightly hard dry, very friable when moist; highly calcareous; clear smooth boundary. Cleab 18577

47 to 51 inches. Light brownish gray (10YR 6/2 dry) to dark grayish brown (10YR 4/2 moist) loam; massive; C2cab 18578 slightly hard dry, very friable when moist; highly calcareous; streaks of very dark graylah brown (10YR 3/2 moist) colors: clear wavy boundary.

51 to 69 inches. Pink (7.5YR 7/4 dry) to brown (7.5YR 5/4 moist) coarse sandy clay loam; massive; slightly IIC3cab hard dry frishle when moist: highly calcaremes ? never 18578

69 to 85 inches. Pink (7.5YR 7/4 dry) to brown (7.5YR 5/4 moist) sandy clay loam; massive; slightly IIChcab 18580 hard dry, friable when moist; highly calcareous.

Landscape Profile:

Horizontal Scale: 200 feet

10 feet Vertical Scale:

Pit 100,0 Richfield Pit 863Colo-58-9 94.0 Pit 91.0 863Colo-58-10 Keith 863Colo-98-11

Bureau of Public Roads Samples: Apl, B2t, B2tb, and Clcab horizons.

Mineralogy (Methods 7Al, 7A2): B2t, B22tb, and IIC3cab horizons. The profile contains small to moderate amounts of well-crystellized kaolinite and mica. The amount and crystelline quality drop in the lower lithic zone. Mont-morillonite increases from a small amount (poorly organized) in the E2t to an abundant amount (well crystellized) in the E22tb. A mederate amount is present in the lower lithic zone.

SOIL SURVEY LABORATORY Lincoln, Nebr. February 1959

SOIL TYPE Laporte LOCATION Chaffee County, Coloredo sandy loam

SOIL NOS. <u>\$580010-8-9</u> LAB. NOS. <u>9082-9085</u>

	******************	<u>]P</u>		PART	CLE SIZ	E DISTRIB	UTION (in	mm.) (pe	er cont)			
DEPTH INCHES	HGRIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURA CLASS
		2-1	1-0,5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0,002	< 0.002	0.2-0 02	<b>002-003</b> 3	(<19 <del>mm</del>	.)
03 3-7 7-12 12-21	All Al2 AC Cca	7.5a 4.9a	6.5a	5.9a 5.2a	10.7a 10.8a	12.1a 11.6a 13.8a 17.9b	36.1 36.0	21.7 23.9	34.6 33.7 37.2 42.3	20.6 19.5	31 28 27 35	1 1 1 1
 8Cla	pH 1:5	1:10		MIC MA		Free Iron Fe ₂ 03	***************************************	6Ela CeCO3 equiv-		MOIST	URE TE	NSIONS 4782 15 ATMOS.
1:1			%	%		6Cla		%		%	%	%
7.9 7.9 <b>7.</b> 9 <b>7.</b> 9			3,50 3,72	0.207 0.213 0.222 0.218	16 17	0.8 0.8 0.7 0.5		26 20 33 47				11.7 13.6 18.4 22.3
5Ala CATION		EXTRAC				BASE SAT.	Base Sat. %	Sun Bases	Sum Catio	Ca/Mg	4	2 2 3 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3
CATION EYCHANGE CAFACITY	C _a	Ma	Н	No	K	NH4AC EXCH.	on Sum		!	•		Ì
NB ₄ Ac		williequiv	olema per	100g. soi		LACIO	Cations				•	
20.6 23.8 22.8 22.6		3.7 5.5 7.4	<pre>0.1 0.1 0.1 0.1 0.1</pre>	<0.1 <0.1 <0.1	:							
a. b.	Few 1 Common	rregul CaCC	ar lig 3 conc	ht bro	m to	black co	mer. (F	e-Mo?)	Also	, few	c _a co ₃	concr.

Described by: A. J. Cline Soil Type: Laporte sandy loam.

Location: SW) of Sec. 33, T13S, R777, Chaffee County, Colorado. Date of Sampling: Sectember 1957

Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline

Physiographic Position: Mountain slope at an elevation of approximately 9,000 feet.

Topography: Steep convex slope of approximately 30 percent facing south.

Drainage: Well drained.

Vegetation: Mountain fescue, ring muhly, pine, and spruce with a scattered tree

cover. Use: National Forest Service land.

Soil Nos.: 858Colo-8-9

## Lincoln Horizon

Lab. No.

9082 0 - 3

inches

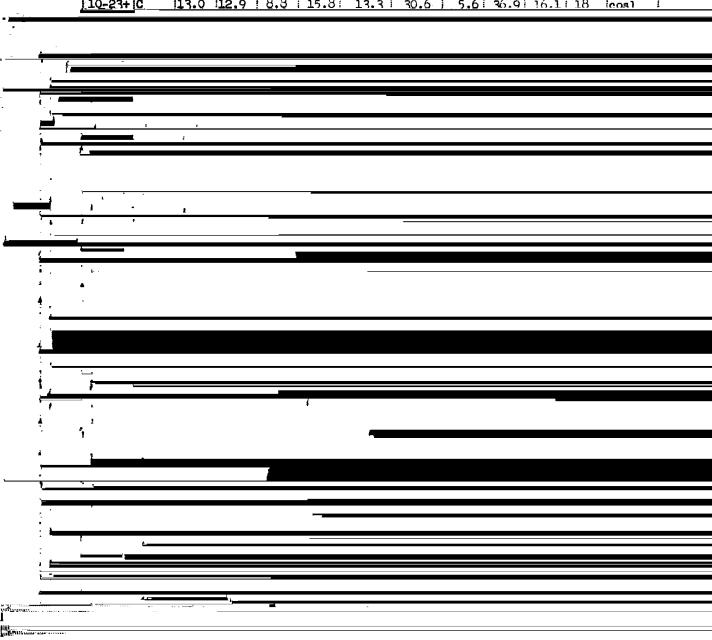
Gray or grayish brown (10YR 5/1.5 dry) to very dark grayish brown (10YR 3/2 moist) gravely sandy loam; soft when dry, very friable when moist; moderate fine granular structure; violently effervescent; approximately 25 percent of this horizon is limestone gravel fragments: lower boundary clear

9083 3-7 inches Grayish brown (10YR 5/2 day) to very dark grayish brown (10YR 3/2 moist) gravelly sandy loam; soft when dry, very friable when moist; weak fine subangular blocky structure ىلىنىدىدىنىدىقىقىدا خىلاھىماڭىغىدا يىلىسىدى مەنەم داسىدىدىنى بىغ سى<u>لەرلارىنى</u>

approximately 25 percent of this horizon is limestone Atham has fothered were haved were

SOIL	SURVE	Y LABORATO	ORY Lincoln,	Nebr. 3/17/58
SOIL		Leal sandy loam	LOCATION	Grand County, Colorado
	SQIL NOS.	S55Colo-25-3	LAB.	NOS. 2877-2880

<del></del>	**************************************	1BI		PARTI	CLE SIZ		UTION (in		namentani Karatj	<b>3Ä</b> I		***************************************
DEPTH INCHES	HORIZON	VERY CGARSE SAND 2-1	SAND	MECHUM SANG	SAND	VERY SAND	\$ILT 0.65-0.902	CLAY	0.7000	000000	2A2 > 2	TEXTURAL CLASS
<b> </b>			1.0.3	0.3-0.23	0.25-0.70	0.10-0.03	0.05-0.002	₹ 0.002	0.2.0.02	TOY TOOK	<19 <b>m</b>	<b>)</b>
2-0	Ao										į	1 i
0-2	A2	9.7	6.6	5.0	10.3	11.3	46.8	10.3	39.8	24.3	10	1
2-10	B2ir	11.1	10.0	6.2	11.6	11.8	40.1	9.2	35.4	23.3	13	11
10-23+	<u>C</u>	13.0	12.9	8.8	15.8	13.3	30.6	5.6	36.9	16.1	18	cosl



Soil Type: Leal sandy loam Soil Nos.: S55Colo-25-3

Location: Approximately the SE 1/4 of the SE 1/4, Sec. 4, T2S, R76W, Grand County, Colorado. Physiographic Position: Lateral moraine along St. Louis Creek.

Topography: Convex slopes of approximately 10 percent facing east.

Drainage: Well drained.

Vegetation: Lodgepole pine with a moderate ground cover of brush and sedges.

Collected by: James Allen, A. R. Aandahl, John Retzer, E. M. Payne, H. Bindschadler, and A. J. Cline, October 9, 1955.

Horizon and Lincoln Lab. No.

Apo

3 to 2 inches. Undecomposed needle mat.

2877

2 to 0 inch. Very dark gray (10YR 3/1 dry) to black (10YR 2/1 moist) partially decayed organic material; rests abruptly on the horizon below.

A2 2878 O to 2 inches. Light gray (10YR 7/2 dry) to grayish brown (10YR 5/2 moist) light loam; soft when dry, very friable when moist; very weak very coarse platy structure breaking to weak fine crumbs; strongly acid; lower boundary abrupt and wavy.

B2ir 2879 2 to 10 inches. Light yellowish brown to brownish yellow (10YR 6/5 dry) to yellowish brown (10YR 5/5 moist) gravelly loam; slightly hard when dry, friable when moist; weak to moderate fine subangular blocky structure breaking to weak to moderate very fine subangular blocks; moderately acid; lower boundary gradual and wavy.

2880

10 to 23 inches plus. Light gray to pale yellow (2.5Y 7/3 dry) to grayish brown or light olive brown (2.5Y 5/3 moist) gravelly sandy loam; slightly hard when dry, friable when moist; massive; slightly

acid to neutral.

SOIL TYPE Leal LOCATION Grand County, Colorado sandy loan

SOIL NOS. S55Colo-25-4 LAB. NOS. 2881-2885

2-0 Ao 0-2½ A2 18.0 10.7 6.8 11 2½-11 B2ir 17.7 13.0 7.3 11	11.4 10.2	34.7 30.9 23.9 23.2	6.6 2	33.9 17 31.5 16	400. (<1 7.2 16 5.0 18	Page (CLASS
2-0 Ao 0-2½ A2 18.0 10.7 6.8 11 2½-11 B2ir 17.7 13.0 7.3 11 11-16 B3 24.7 15.5 7.8 11	11.5 10.0 11.4 10.2 11.5 10.0	34.7 30.9 23.9	8.3 3 9.5 3 6.6 2	33.9 17 31.5 16	7.2 16	cosl
0-2½ A2 18.0 10.7 6.8 11 2½-11 B2ir 17.7 13.0 7.3 11 11-16 B3 24.7 15.5 7.8 11	11.4 10.2	30.9 23.9	9.5 3	31.5   16	5.0 18	
	{ <u></u>		4.6 3		L.9 25 L.5 16	cosl
PH ORGANIC MATTE	ER <b>Fijs</b>	81.41848413cr24.841.441.4	E7703+44404(2+1)	18/14/14/14/14/1		E TENSIONS
8CLB 6BLB ORGANIC NITRO-	Iron Fe203	***************************************	NATIONAL CONTRACTOR	47	Bla   4E	On 482
- hi	%		•-·· <b>••</b>		<b>%</b>	5
	33 1.0 21 1.2 0.8 0.7					5.7 3.9 3.0
NE _L Ac	NHILAC K EXCH.	C-+	Sum S Beses C		Ca/	Mg
millioquivalents per 100g, solf	> 5C1	5C3. #	e/100 <b>cm</b> e	\100k		
10.9 2.7 0.8 8.8 0.1 7.3 2.5 0.6 4.4 0.1	0.6 32 0.3 36 0.2 46 0.1 53	28 31 44 49	4.1.94.0	14.9 12.7 7.8 6.1	meja - 1.00, princes per agardo glora, glorapega dinaggini liggini dinaggini per ingilinginga dinagging dinagg	

Soil Type: Leal sandy loam

Soil Nos.: 855Colo-25-4 Location: Near the center of Sec. 9, T28, R76W, Grand County, Colorado. Physiographic Position: Upland, small terminal moraine.

Topography: Moderately sloping convex area of about 4 percent gradient, facing east. Brainage: Well drained.

Vegetation: Principally lodgepole pine.

Use: Forested land.

Collected by: J. Allen, H. Bindschadler, E. M. Payne, J. Retzer, A. J. Cline, August 1955.

Horizon and Lincoln Lab. No.

 $2\frac{1}{2}$  to 2 inches. A massive undecomposed mat of pine needles and other organic debris.

2 to 0 inch. Very dark gray (10YR 3/1 dry) to black (10YR 2/1 moist) massive partly decomposed organic material; very strongly acid. The horizon rests abruptly on the horizon below. Ao 2881

O to 22 inches. Light gray (10YR 7/2 dry) to grayish brown (10YR 5/2 moist) sandy loam; soft when dry, A2 2882 very friable when moist; weak very coarse platy structure breaking to weak to moderate fine crumbs; strongly acid; lower boundary clear and wavy.

2½ to 11 inches. Hight yellowish brown (10YR 6/4 dry) to dark yellowish brown (10YR 4/4 moist) gravelly sandy loam; soft when dry, very frishle when moist; weak to moderate fine subangular blocky structure; strongly acid; lower boundary gradual and smooth. R21r 2683

2884 11 to 16 inches. Light yellowish brown (2.5Y 6/4 dry) to olive brown (2.5Y 4/4 moist) gravelly sandy loam; soft when dry, very friable when moist; very weak medium subangular blocky structure; slightly acid; the horizon contains common numbers of medium-sized distinct 10YR 5/4 mottles; lower boundary gradual and smooth.

16 to 23 inches. Pale yellow (2.5Y 7/3 dry) to light olive brown (2.5Y 5/3 moist) gravelly coarse 2885 sandy loam; soft when dry, very friable when moist; massive; approximately neutral.

SOIL Ittle stit loam

SOIL Nos. 9610010-2-1 LOCATION Arguehoe County, Coloredo

SOIL SURVEY LABORATORY Lincoln, Mehranka

1AR Nos 15485-15401

Pehruary 1065

					-													
	Ī	1,31a						Size	e class and	particle di	ameter (mm	) 3A1						
1		Total			Sand				Sitt			BATE Clay		Coarse fragments 2A2				
Depth	Horizon	Sand	Silt	Clay	Very	Coarse	Medium	Fine	Very fins	l	Int. XXI	Int. II (0.2-0.02)	(2-0.1)	Caracon-	Noncen	<b>&gt;</b> 2	2 _ 10	19 - 76
(In.)		(2-0.05)	(0.05-	( = 0.002)	coarse (2-1)	(1-0.5)	(0.5-0.25)	(0.25-0.1)	(0.1-0.05)	0.05-0.02	(0.02-	,	(1-0/1)		bonate	1	1	1. of
					=		Pct. of <							<u> </u>		Pct.	- ž	6 mm
0-3 3-6	A1. 133	14.3 9.5	57.5 48.5	28.2 42.0	O.la	0.4a 0.2a	0.2	0.9	12.4 8.2	20.7	18.9 25.4	51.8 31.9	1.9	-	28 42	Tr.		
6-13	E5	14.5	52.2	43.3	-	0.1a	0.1	0.4	3.0	23.1	33.5	22.9	1.3	ī	12	Tr.	ł	ì
13-23	B3cs	3.8	53.4	42.8	0.16	0.75	0.50	J.06	7.51	13.4	40.0	15.4	2.3	ψr.	113	Tr.	<u> </u>	
23-31	F1 F2	5.3	54.8 57.8	39.9 hj.3	0.2b 0.1b	0.1b	1.1h		1.3h 0.4e		40.3 43.5	16.5 14.8	0.5	-	43	Tr.		) '
43-55	R3	7.4	58.7	30.0		0.35	0.15			17.2	42.5	17.8	0.0	-	140	mr.	<del>                                     </del>	<del> </del>
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<b>-</b>		<del> </del>	-			-	<b>-</b> -	<u>-</u> -	_		<del> </del> -	-				<del> </del>		<del> </del>
				1	]											İ		
	6Ale.	6Bla			6 <b>⊑1.</b> e	6Cla Ext.		Bulk densit		4101		ater conter		İ	8D1		рH	0==
Depth	Organic	Nitrogen	C/N		Carbon-	Iron		4AJ.e	4Alb		jiB3	4E3.b	482	1/C1 1/3- to	15-Bar Water		8Cla	8Cla
(ln.)	Carbon	1	l	}	ate as	as	}	BO-Cm.	Dry	₫.	30-0m.	1,3-Ber	15 <b>-3</b> 07	15 Bar		Pasto	1:10	(1:1)
	1	1	1			Fe					ĺ			in.per	Clay			li
<u> </u>	Pct.	Pct.	7.0	<u> </u>	Pct.	Pet.	g/cc	g/oc	g/cc	<u> </u>	Pct.	Pct. 22.8	Pct.	nortzon		1	<b>.</b>	<del>   </del>
0-3 3-6	1.78 1.06	0.107	12		Tr.	1.0			1.48		Ì	25.1	11.5 14.8		0.41	7.28 7.8 8.0	7.5 8.3	7.3 7.9 8.1
6-13	0.64	0.072	9	<u> </u>	9	1.0	<b>-</b>	1.12		0.34	25.9	21.0	14.6	1.0	0.34	8.0	8.5	8.1
13-23 23-31	0.32	0.043	7		8	1.0		ŀ	1.68		1	24.4 33.1	14.8 18.5		0.34	7.9 3.0	8.0	7.8 7.8
21~43	0.13	0.054	<u> </u>	l	5 6	1.1	<u>L</u>	1.54	1.82	0.64	27.0	33.9	18.8	2.8	0.46	7.9	8.0	17.8
43~55	0.13				5	1.1						33.1	17.6		0.44	7.9	8.0	7.8
		Extractab		BJa.			Cat	. Exch	C277 .	<b>601</b> -	I Crea		extract from	seturated			(77	1045
Depth	İ		6P2a	602a	ĺĺĺ			5A2a	6Ma	60 <b>La</b>	6PLa	(ପ୍ରୀଛ		6IIa	6JLa	6KI a	6Lla	SALa Electrical
(ln.)	Ca	Mg	Na	K			NH _L OAc	Ne CVC	Ca	Mg	Na	K		co3	нсо 3	C1	so 4	conductiv-
					meq/100 g			 					iter				<u> </u>	mmho/cm
0-3		l	Tr.	1.3			20.9	21.8			0.3	0.4		· <del>-</del>		, ,		0.65
3-6 6-13	ĺ	ļ	0.1	0.6	i		24.2	25.8 24.8	ļ		0.5	0.2						0.58
13-23			3.5	0.5			218	22.5	23.0	43.2	20.5	0.5		-	8.4		97.7	
23-31 31-43		ļ	12.2	0.4	i		21.6	22.3	21.6	1.62	127	0.6		-	6.8	1.0 1.5	312	>15
113-55			13.6 13.4	0.5			21.4	22.7	21.3	152 146	127	0.7			4.3 6.1	7.7	305	>15 >15
-,3-77											]	***						
								_										
	8A	5D1	5E	ΛF1.s	8D1.			a.	> 50%	Organ	ic mat	ter					<u> </u>	<u> </u>
Depth	Water	Exchange-	Sodium		nh _l oac CEC			ъ.	> 50%	pypsu	m. < :	5% car	bonate	٠.				
(in.)	at Saturation	Na CAC	Adsorp- tion		to		}		5 <b>-2</b> 5%	EMPsu	m. <	5% <b>ca</b> r	bonate	֥				
		Ne CAC CEC Pet.	Ratio		Clay			a.	Coeff	icient	of li	near e	xtensi	bility	<b>.</b>			
	Pct.	Pct.	<u></u>	Pct.	Ratio		<u> </u>	}										
0-3 3-6	59.7 73.8		1	-	0.74 0.58													
6-13 13-23	73.6 65.0	7	5	4.6	0.52		<del> </del>											
53-37	72.0	13	13	4.7	0.54		1	ļ										
31-43	76.7	17	14	1.4	0.52		<b>L</b>											
43-55	78.5	16	14	1.2	0.54			<b> </b>										
							L											
							}	1										

Soil Type: Litle silt loam Soil Nos.: 961Colo-3-1

Classification: Brown.

Location: 220 feet north, 2,820 feet east of the southwest corner of Sec. 23, T5S, R57W, Arapahoe County, Colorado.

Climate: Continental, average annual precipitation 13 inches. Mean annual temperature 49° F.
Frost-free period 150 days. Elevation 5,000 feet.

Vegetation: Native pasture. Blue grama, western wheatgrass, buffalograss, sixweeks fescue, snakeweed, pricklypear.

Parent material: Partially consolidated silty shale - Pierre formation.

Physiographic position: Upland. Relief: Gently sloping, smooth 5 percent west-facing s Drainage: Very slow internal in D horizon. Moderate internal in solum. Intake rate is moderate. Moisture: Moist throughout, but usually dry.
Water table: None. Stoniness: None. Relief: Gently sloping, smooth 5 percent west-facing slope.

Water table: None.

Salt or alkali: Gyp horizon typical below 12 inches. Calcareous at 0 to 6 inches, less with depth. Rrosion: Slight water erosion. Catateps or slips occur on slopes over 8 percent. Described by: J. B. Brown, June 26, 1961.

Horizon and Lincoln Lab. No.

E4

O to 3 inches. Dark grayish brown (2.5Y 4/2, moist) silt loam; grayish brown (2.5Y 5.5/2, dry) weak 15485 medium subangular blocks breaking to moderate very fine granules; soft when dry, very friable when moist; surface 1 inch has fine platy structure; clear smooth boundary.

3 to 6 inches. Bark grayish brown (2.5Y 4/2, moist) silty clay loam; grayish brown (2.5Y 5.5/2, dry) clive brown (2.5Y 4/3, moist and crushed) weak fine prismatic breaking to moderate fine angular blocks; slightly hard when dry, friable when moist; many roots and pore spaces; thin clay skins on some vertical 15486 faces, and some root channels; strong offervescence; clear slightly wavy boundary.

6 to 13 inches. Olive brown (2.5Y 4.5/3, moist) light silty clay; light yellowish brown (2.5Y 6/4, dry) moderate medium prisms breaking to moderate medium angular blocks; hard when dry, firm when moist; many __ 15487 roots penetrating peds; thin patchy clay skins on all ped surfaces; strong efferemence; clear slightly wavy boundary.

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to weak medium subangular blocks; hard when dry, firm when moist; fewer roots and channels than horizons above, but still in evidence; thin patchy clay films along some channels; gyp concretions are common 15488 medium and faint; strong effervescence; gradual boundary.

23 to 31 inches. Light clive brown (2.5Y 5/3, moist) silty clay; light yellowish brown (2.5Y 6/3, dry) 15h80 very weak coarse prismatic structure; hard when dry, firm when moist; few roots and channels in this horison; slightly efferoscent in spots; gradual boundary.

31 to 43 inches. Hight olive brown (2.5Y 5/3, moist) silty clay; light yellowish brown (2.5Y 6/3, dry) moderate very coarse plates or massive structure; very hard when dry, firm when moist; a few fine roots may be found; fine iron stains running horizontally in the shale; arbitrary boundary. 15490

43 to 55 inches. Light olive brown (2.5Y 5/3, moist) silty clay; light yellowish brown (2.5Y 6/3, dry) moderate very coarse platy or massive structure; very hard when dry, firm when moist. 15491

Remarks: This soil has been mapped as both Winifred and Pierre in the past. Iess than 5 percent cultivated in this county. Some slick spots approximately 100 feet in diameter, are commonly associated with this soil. pH may be 9.0 or more in the top 3 inches of the slick spots, with no RI horizon present.

Bureau of Public Roads Samples: Al, 0-3 inches; B2, 6-13 inches; Dr2, 31-43 inches.

Observations of fabric with stereoscopic microscope: The B1 and B2 horizons appear to have no clay films on planar surfaces and probably none around circular pores or channels. No clay films observed in the E3cs.

Micromorphology (Method 4E1): Examined thin sections of the E2. A very few small clay films; no really clear-cut

SOIL Mitle sil+ loam

SOIL Nos. SCICOLO-3-2 LOCATION Arapahoe County, Colorado

SOIL SURVEY LABORATORY Lincoln, Mebraska

LAB. Nos. 15492-15499

February 1965

		1Ble						Size	class and	particle dia	meter (mm	3/1						
			Total				Sand			s				3Ala C	Lay	Coa	rse fragme	nts2A2
Depth (in.)	Horizon	Sand (2-0.05)	\$ilt (0.05– 0.002)	Clay ( ~ 0.002)	Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	i	Very fine (0.1-0.05)	0.050.02	Int. [3] (0.02- 0.002)	Int. II (0,2–0.02	(2-0.1)	Carton- ate	Moncer- conste	>- 2 Pct.	2 - 19 Pct. 76	of
0-3 3-6	AJ. BJ.	10.0 6.4	54.4 51.5	35.6 42.1	0.1h	0.5h 0.2b	0.6	1.6 1.0	7.2	27.4 22.4	27.0 29.1	35.7 28.0	2.8	-	35.6 42.1	Tr.		
6-13 13-20 20-30	B2 B3cs RL	14.5 1.3	51.1 42.4 48.4	44.8 43.1 49.9	0.1h 0.2e 0.1e	0.3b 1.1c 0.4c	0.2 1.30 0.20	0.7 6.3c 0.4c	2.8 5.6c 0.3c	17.8 11.0 8.9	33.4 31.4 39.5	21.1 20.4 9.4	1.3 8.9 1.4	-	44.8 43.1 49.9	Tr. Tr.		
30-42 52-54 0-1	S(P) el	0.7 0.5 13.3	50.2 50.7 53.3	48.8 35.4	0.20	0.1c	0.1c 0.6	1.9 0.2 0.2	8.1 0.2 0.5	7.7 8.4 30.2	42.5 42.3 23.1	8.0 8.7 39.6	0.5 0.3 3.2	-	49.1 48.8 35.4	Tr. Tr.		
	6Ла	ABla			6≌le			Bulk densi	y 4A1h	4111		ater conte	nt   482		8D1		Hq	
Depth (in.)	Organic carbon	Nitrogen	C/N		Carbon- ate as CaCO 3			1/3-Ber	Air-	COLE E	481h 1/3-Ber		15-Bax		L5-Ber Water to Clay		8Cla 1:10	(1:1)
0-3 3-6 6-13	Pct. 1.57 0.98	Pct. 0.139 0.091	11 11 10		Pct. Tr. 4		g/cc	2/cc	g/cc	0 10	Pct.	Pct.	Pct. 12.7 14.1		0.36 0.33	7.5 8.0	7.9 8.8	7.6 8.3
13-20 20-30 30-42 42-5h	0.76 0.3° 0.21 0.17 0.16	0.076 0.036 0.029	7		1, 14 14 14				1.68	0.42	29,53		15.7 15.6 19.8 20.4 20.4		0.35 0.36 0.40 0.42	8.3 8.0 7.8 7.9	8.9 8.3 8.0 8.0	8.3 8.2 7.8 7.7 7.7
0-1.	2.17				Tr.	,							12.1		0.34	7.ź	7.8	7.4
		Extractab	le bases 51 SP2a.	Bla 602a				. Exch	6ma	ර <b>ා</b> ද	6Pla	Water 601a	extract from	saturated	paste 84 6Jle	1 6kla	6Lla	8Ala
Depth (in.)	Ca	Mg	Na	к			5 <b>Ala</b>	5A2a Na CAc	Ca	Mg	Na	ĸ		co ₃	HCO3	CI		Electrical conductiv- ity
0-3 3-6 6-13		-	0.6 2.1 5.2	1.3 0.8 0.5	meq/100 g		22.7 24.0 23.8	23.3 25.5 25.6	4.1	10.5	2.4 5.2 28.0	0.3 0.1 0.2	iter	_	8.4	0.2	39.2	0.70 0.78 4.00
30-48 30-48 30-48			0.9 17.6 18.2	0.3 0.4 0.4			20.1 24.4 25.7	27.2 26.4 27.4	22.9 23.3 23.5	122 108 100	11.4 166 166	0.3 0.4 0.5		-	9.6 7 <b>.3</b> 4.8	1.5 2.4	270 315 351	>15 >15 >15 >15
42-54 0-1			17.0 0.3	1.5			25.8 22.5	27.0 23.7	22.4	2.9	152 1.6	0.4		-	4.8 7.6	0.2	301 Tr.	>15 0.78
	84	5D).	5E Sodium	6Fla	8D1 MH _h CAc			ā.			Al hor					· · · · · · · · · · · · · · · · · · ·		
Depth (in.)	Water at Saturation Pct.	Exchange- ebie Na Na OAC CEC Pct.	Adsorp- tion Ratio	Gypsum	CEC to Clay			b. d. e.	> 50% One 03	gypsu lad.	ic mat m. of lir		xtensi	<b>bili</b> ty	•			
0-3 3-6 6-13	59.3 61.8 60.3	2 7 14	11		Ratio 0.64 0.57 0.53													
13-50	62.5 79.0	13 17	13 20	22.7	0.49		Ì	1										
20-30 30-42 42-54	79.2 78.6	19	21 19	0.8	0.52 0.53		ļ 											

Soil Type: Little silt loam Soil Nos.: S61Colo-3-2 Classification: Brown.

Location: 2,900 feet east, 90 feet south of the northwest corner of Sec. 31, T5S, R57W, Arapahoe County, Colorado.

Climate: Continental, average annual precipitation 13 inches. Average annual temperature 49° F.

Frost-free period 150 days. Elevation 5,000 feet.

Wegstation: Mative pasture. Elue grama, western wheatgrass, alkali sacaton, buffalograss, sixweeks fescue, cheat,

pricklypear. Parent material: Partially consolidated silty shale. Pierre formation.

Physiographic position: Upland.

Relief: Gently sloping, smooth 5 percent slope facing west.

Dryinage: External, excessive; internal, very slow in D horizon, well-drained in solum. Intake rate is moderate.

Moist throughout when sampled, usually dry.

Stoniness: None. Water table: None.

Sait or alkali: Cyp horizon typical below 12 inches. Calcareous at 0 to 6 inches, less with depth. Brosion: Slight water. Catsteps or slips occur on slopes over 8 percent.

Described by: J. B. Brown, June 26, 1961.

Horizon and Lincoln Lab. No.

0 to 3 inches. Dark grayish brown (2.5Y 4/2, moist) silty loam; grayish brown (2.5Y 5/2, dry) weak 15492 sedium subangular blocky breaking to moderate fine granules; soft when dry, very friable when moist; top

one inch is moderate fine granular, or platy structure, and was sampled separately at this location; clear smooth boundary.

3 to 6 inches. Dark grayish brown (2.5Y 4.5/2, moist) silty clay loam; grayish brown (2.5Y 5/2, dry) olive brown (2.5Y 4/3, moist and crushed) weak fine prisms breaking to moderate fine angular blocks; 15493 slightly hard when dry, firm when moist; many roots and channels, with thin patchy clay film on some faces and along some channels; strong effervescence; clear smooth boundary.

6 to 13 inches. Hight clive brown (2.5Y 5/3, moist) silty clay; light yellowish brown (2.5Y 5/3, dry) 15494 moderate medium prismatic breaking to moderate fine angular blocks; hard when dry, firm when moist; many roots penetrating peds; thin patchy clay films on ped surfaces; strong effervescence; clear smooth boundary.

B308 15h05 13 to 20 inches. Olive 57 5.5/3, moist) silty clay; pale yellow (57 7/3, dry) weak medium prisms breaking to week medium subconciler blocks; bond when dry. Firm when moist, some month with matches also deleted to

gradual smooth boundary.

20 to 30 inches. Olive (5Y 5/3, moist) silty clay; pale yellow (5Y 7/3, dry) light olive brown (2.5Y 5/3, moist and crushed) very weak coarse prismatic or massive structure; hard when dry, firm when moist; few roots and channels; fine horizontal iron stains, giving a change in color when the soil is moist R1 15496 and crushed; in this horizon and below, pockets of clear gyp crystals one inch or more square are present, with an average of two per square foot of surface; slightly efferwearent in spots; gradual smooth boundary.

30 to 42 inches. Olive (5Y 5/3, moist) silty clay; light olive gray (5Y 6/2, dry) moderate very coarse

SOIL TYPE **Jucky LOCATION Gunnison County, Colorado gravelly sandy loam

SOIL NOS. S59Colo-26-2 LAB. NOS. 11994-11997

} }	######################################	1B					UTION (in					
0-6 6-13 13-20 20-37	A12 B2t		COARSE SAND 1-0.5 19.1 19.8 16.4	0,5-0,25 6.6 6.3	FINE SAND 0.25-0.10 8-7 7-3 8-2 9-4	VERY FINE SAND 6.10-0.05 6.0 4.7 6.0 6.9	silt 0.05-0.002 28.6 24.3 27.5 27.4	CLAY < 0.002 8.0 7.2 12.3 10.4	26.0 20.0	002-0002 12.8 12.3 12.9	2A2 > 2 (<19mm 27 32 41	CLASS  cosl cosl cosl cosl
8Cla 1:1 6.9 7.0 7.1 7.4	pH 1:5	1:10	6ALa ORGANIC CARBON % 1.62 0.70 0.35	MiC MA 6B1A NITRO- GEN % 0.120 0.058 0.032 0.018	c/N 14 12 11	6Cla Free Iron Fe ₂ O ₃ % 1.5 1.6 1.6 1.8		6Elc CoCO3 equiv- olen: % < 0.1 < 0.1 < 0.1 < 0.1	and the state of	MOIST 1/10 ATMOS. %	IURE TI	HB2 15 ATMOS. 4.6 4.2 6.2 6.1
5Ala cation CAPACITY NELOAC 10.3 8.7 11.3 11.9	6м2ъ	602ъ Ма	H alents por 2,4	6P2a. No	692a K 0.6 0.4 0.4	EYCU	Basc Set. % on Sum Cations 5C3 81 86 85	Sum Ext. Bases 5Bla 10.4 9.0 11.9	•	Ca/Mg 8D3		O. D. Bulk Density g/cc
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Soil Type: *Lucky gravelly sandy loam

Date: September 1959, by J. Nishimura, D. Boyer, E. Kleven, W. Goddard, E. M. Payne, J. S. Allen, L. Juve, C. J. Fox

Parent Material: Residual and partly colluvial from gneiss and schist. Physiographic Position: Smooth rounded hilly to low mountainous upland slope at an elevation of 9150 feet.

Topography: Steep, uniform slope of 25 percent with westerly exposure.

Drainage: Well-drained

Location: NE dof Sec. 10, T. 48N., R. 1 E. photo 3020, Gunnison County, Colorado.

Vegetation: Dominantly big sagebrush (Artemisia tridentata), bitterbrush (Purshia tridentata), very sparse grasses. About 60 percent vegetative ground cover.

Use: Rangeland

Soil Nos.: S-59-Colo-26-2 Described by: Charles F. Fox.

Lincoln Horizon

Iab. No.

1199և A₁₁ Rocks and angular gravel occupy about 5 percent of surface. 0-6 inches Dark yellowish brown (10YR 3/4 dry) to (10YR 2/4 moist) gravelly sandy loam; weak very fine granular structure; soft when dry, very friable when moist, nonplastic when wet; approximate pH 6.5; approximately 15 percent of this horizon is angular gravel; roots plentiful; lower boundary clear and smooth.

11995 A₁₂ Yellowish brown (10YR 5/4 dry) to dark yellowish brown 6-13 inches (10YR 4/4 moist) gravelly sandy loam; weak medium subangular blocky structure that crushes to moderate fine granules: slightly hard when dry, very friable when moist; slightly sticky when wet; approximate pH 6.0; roots plentiful; lower boundary clear and smooth.

11996 B_{2t} Yellowish brown (10YR 5/4 dry) or dark yellowish brown 13-20 inches (10YR 4/4 moist) gravelly clay loam; moderate medium subangular blocky structure that crushes to moderate fine granules; very hard when dry, firm when moist, plastic when wet; thin continuous clay films; approximate pH 6.5; occasional angular gneiss and schist rocks; roots few; lower boundary clear and wavy.

11997 B₃ 20-37 Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) inches gravelly sandy clay loam; weak medium angular blocky structure breaking to strong fine granules; subangular blocky aggregates are somewhat vesicular; thin clay films; an occasional angular rock; roots very few; approximate pH 6.5; lower boundary abrupt and wavy. 37" plus. Gneiss and schist bedrock.

Remarks: Thickness of the A horizon varies widely depending upon proximity to sagebrush. The A horizon is deeper immediately under sagebrush.

Bureau of Public Roads Samples: 0-6 inches, 20-37 inches.

SOIL SURVEY LABORATORY Lincoln, Nebr. 3/18/58

SOIL TYPE Mine LOCATION Grand County, Colorado gravelly loam

Q550010-25-7

2800-2002

		130	A	PARTI	CL 6-51Z	E DISTRIB	UTION (in	mm.) (pe	r cent)	3 <b>A</b> l		:
DEPTH INCHES	HORIZON	VERY COARSE SAND 2-1	COARSE SAND 1.0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0. 25-0. 10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	< 0.002	0. 2-0.02	<b>0</b> ,02- <b>0.00</b> 7	2A2 > ² (<19==	TEXTURA CLASS
0-3 3-6 6-13 13-20+	A1 A3 C1 C2		9.4 9.7 10.9 14.4	7.1 6.8 10.1 10.0	13.7 14.4 19.5 17.2	13.9 15.7	40.4 39.1 30.6 28.6		40.2 44.0 43.9 39.9		6 8 12 16	l sl sl sl
	PH			NIC MA	TTER	GCIA Free	at a arerderê regegge.	***************************************	************	MO)S1	CURE TE	
8Cla t:t	1:5		GALA ORGANIC CARBON		C/N	Iron Fe ₂ 03	•			1/10 ATMOS. %	1/3 ATMOS,	4B2 15 ATMOS.
6.1 5.8 5.9			1.82 0.70 0.33	.088 .044 .018	21 16 18	1.4 1.4 1.3			*****			6.8 5.2 4.3

Soil Type: Mine gravelly loam Soil Nos.: S55Colo-25-7

Location: Approximately the NE 1/4 of the NE 1/4, Sec. 4, T2S, K76W, Grand County, Colorado. About 0.1 mile north and 50 feet west of the Forest Service headquarters building on the road to Fraser.

Physiographic Position: Outwash terrace.

Topography: Gently sloping convex area having a gradient of approximately 3 percent facing northwest.

Drainage: Well drained.

Vegetation: Iodgepole pine, understory of vaccinium bruah and grass. Use: Forest land.

Collected by: James Allen and A. J. Cline, August, 1955.

Horizon and Lincoln Lab. No.

1 to 0 inch. Very dark gray (10YR 3/1 dry) to black (10YR 2/0 moist) partially decomposed organic material. A thin surface cover of last year's needle fall overlies this horizon. This horizon rests Aο abruptly on the horizon below.

0 to 3 inches. Dark grayish brown (10YR 4/2 dry) to very dark brown (10YR 2/2 moist) gravelly loam; 2899

soft when dry, very friable when moist; moderate medium and fine crumb structure; approximately neutral; the horizon contains many plant roots; lower boundary gradual and wavy.

A3 3 to 6 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) gravelly loam; 2900 slightly hard when dry, very friable when moist; very weak medium subangular blocky structure breaking to weak to moderate fine granules; approximately neutral, lower boundary gradual and wavy.

Cl 6 to 13 inches. Light yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) gravelly 2901 sandy loam; soft when dry, very friable when moist; very weak coarse and medium subangular blocky structure; approximately neutral; lower boundary gradual and wavy.

œ 13 to 20 inches. Light yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) gravelly 2902 sandy loam; loose when dry, very friable when moist; massive; approximately neutral in reaction.

SOIL NOS. E550010-25-8 LAB. NOS. 2914-2916  PARTICLE SIZE DISTRIBUTION (In sec.), Secretary 1242  PRINCE LOSS VERY COLORS MECHANIC FILES VERY 1115  PRINCE LOSS VERY COLORS MECHANIC FILES VERY 1115  PRINCE LOSS VERY COLORS MECHANIC FILES VERY 1115  PRINCE LOSS VERY LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES VERY 1115  PRINCE LOSS VERY MECHANIC FILES	<b>6011</b>		LI LADO	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Lincoln, Nebr	. 3/18/5	58
DEPTH LODI-OL CLARKE COARSE MEDIUM FINE PINE PINE PINE PINE PINE PINE PINE P	3012	_ TYPE.	Mine gravelly lo	LOCA	ATION Gran	d County, Co	olorado
DEPTH LOON OF COASE WENT COASE WENT THE PINE YEAR THE TIME THE PINE YEAR THE TIME THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE THE PINE TH		SOIL NOS.	S55Colo-	25-8	LAB. NC	S. 2914-29	916
DEPTH LIGHT COARSE WENTER FINE THE THE THE THE THE THE THE THE THE TH	***************************************		181a P	ARTICLE SIZE DIST	RIBUTION (in mm.		3A1
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Soil Type: Mine gravelly loam

Soil Nos.: S55Colo-25-8

Location: In the NW 1/4 of Sec. 3, T2S, K76W, Grand County, Colorado, just east of the Forest Service headquarters building on the first terrace level across St. Louis Creek.

Physiographic Position: Outwash terrace.

Topography: Gently sloping convex area of approximately 3 percent gradient.

Drainage: Well drained.

Vegetation: Principally lodgepole pine with a thin understory cover.

Use: Forest lands.

Collected by: H. Bindschadler, J. Allen, J. Retzer, and A. Cline, August, 1955.

Horizon and Lincoln Lab. No.

Ao - Aoo

œ

2916

Ψ.

1 to 0 inch. The upper part of this horizon is a nearly undecomposed mat of pine needles. The lower part is partially decomposed. This horizon rests aboutly on the horizon below.

0 to 3 inches. Very dark grayish brown (10YR 3/2 dry) to very dark brown (10YR 2/2 moist) gravelly logn, soft when dry very frishle when moist, week to moderate fine commb standards. Alabeth cold losme coff when dry

reaction; lower boundary clear and wavy.

3 to 9 inches. Pale brown (10YR 6/3 dry) to dark brown (10YR 4/3 moist) gravelly sandy loam; slightly 2915 hard when dry, very friable when moist; very weak medium subangular blocky structure breaking to medium to coarse crumb; approximately neutral in reaction; about 30 percent of this horizon is gravel; lower boundary gradual and smooth.

> 9 to 18 inches. Light yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) gravelly sandy loam; loose when dry and moist; massive; approximately neutral in reaction; about 70 percent of

this horizon is gravel and rock fragments.

79-50-66-622-76-527-86			<u> </u>	<u>-8-5</u> .			LAB. I	NOS.	90	67-907	7O	
DEPTH INCHES		1B1		PARTI MEDIUM SAND	CLE-SIZ FINE SAND		SILT 6.05-0.002	CLAY	er cent)	3А	1 2A2 > 2	TEXTURAL CLASS
0-4 4-9 9-13 1 <b>3-1</b> 9		4.2a 3.6a 3.8b 4.6b	2.9a 3.1a 3.9b 4.9b	1.9a 2.1a 2.6b	3.8a	7.9a	47.6 41.8 39.4	3]7	27.6	30.5	12	cl cl cl cl
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Soil Type: Nathrop loam. Described by: A. J. Cline

Location: NEt of Sec. 33, T13S, R77W, Chartee County, Colorado

Date of Sampling: September 1957

Collectors: A. J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline

Physiographic Position: Upland mountain slope at an elevation of approximately 9,300 feet.

Tonography: A moderately steep convex slope of approximately 8 percent facing south. Drainage: Well drained. Vegetation: Ring muhly, mountain fescue, scattered blue grama. Use: National Forest Service land.

Soil Nos.: 958Colo-8-5

## Lincoln Horizon

18b. No. 9067 A₁ O-l₁ inches

Grayish brown or brown (8.75YE 5/2 dry) to very dark grayish brown or dark brown (8.75YE 3/2 moist) loam; soft when dry, very frieble when moist; weak fine subangular blocky structure, breaking to moderate fine granules; strongly efferescent; lower boundary clear and smooth.

9068 B_{2t} l+9 inches

Brown (7.5YR 5/3 dry) to dark brown (7.5YR 3.3/3 moist) clay loam; slightly hard when dry, very friable when moist; weak medium prismatic structure breaking to weak to moderate medium subangular blocks; strongly effervescent; there are thin patchy clay skins on both the horizontal and vertical faces of the soil aggregates; approximately 10 percent of this horizon is gravel; lower boundary clear and smooth.

9069 B 9-13 3ca inches Brown (7.5YR 5/3 dry) to dark brown (7.5YR 1/3 moist) gravelly loam; slightly hard when dry, very friable when moist; weak fine subangular blocky structure; breaking to moderate fine granules; violently effervescent; this is a weak horizon of lime accumulation with visible lime occurring as concretions and as coating on the gravel; approximately 10 percent of this horizon is gravel; there are a few thin patchy clay skins principally on the vertical faces of the soil agregates; lower boundary gradual and smooth.

9070 C 13-19 inches

White (10YR 8/2 dry) to light brownish gray or pale brown (10YR 6/2.5 moist) gravelly loam; slightly hard when dry, very friable when moist; massive or very weak granular structure; violently effervescent; this is a prominent horizon of lime accumulation with visible lime occurring mostly in finely divided forms; approximately 50 percent of this horizon is gravel; lower boundary gradual and smooth.

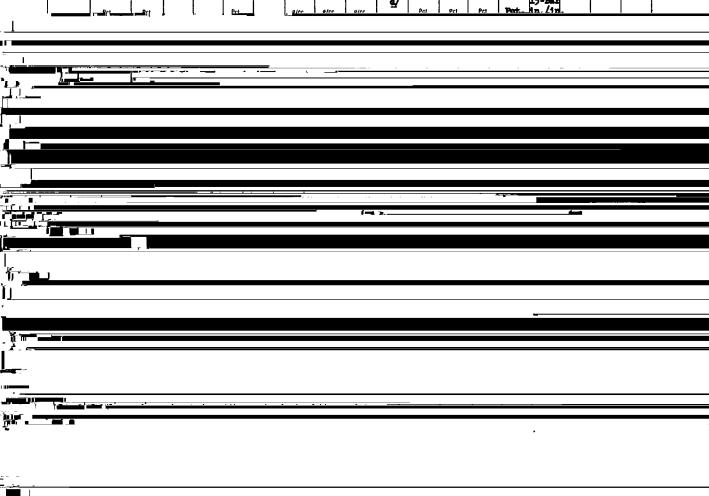
D 19-26 inches

Fractured and partially weathered Pennsylvanian limestone bedrock. This horizon was not sampled.

SOIL Menesta silty clay loam 4/ SOIL Nos. #60Colo-50-9 LOCATION Provers County, Colorado

SOIL SURVEY LABORATORY Incoln, Hebracks LAB. Nos. 14682-14685 Jamesry 1966

		1 1	Bla			_		Size	class and	particle dia	meter (mm	)	3A1.					
			Total				Sand			Si	ilt .		Γ	CLAY	3A1a	Coac	se fragme	nts
Depth (In.)	Horizon	\$and (2-0.05)	Sift (0.05± 0.002)	Clay ( = 0.002)	Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25	Fine (0.25-0.1)	Very fine (0.3-0.05)	0.05-0.02	Int. ДІІ (0.02 (0.002)	Int. 11 (0.2–0.02)	(2-0.1)	Carbon	_	2A2 (-(19) Pet.	2 19 Pct. 76	of
0-7	Apl.	13.1	45.5	41.4	1.0b	מנונ	0.60		8.8c	22.3	23.2	32.2	4.3	Tr.	41	Tr.		
7-11	Ap2	15.6	43.4	41.0	0.7	1.20	0.80	2.00	0.9e	22.6	20.8	34.0	b.7	Tr.	14.7	4		
11-16	R21	23.5	11.5	35.0	1.2	2.16	1.30	3.0c	5.90	26.1	15.4	44.0	7.6	<u> </u>	34	Tr.		
16-26	102	23.3	¥3.7	33.0	3.2	2.70	1.20	2.5c	13.7a	30.1	13.6	45.4	9,6	h.	29	Tr.		
Depth (In.)	Organic carbon	6Bla Nitrogen	C/N		6ELC Carbon- ate as			Bulk densi FALC BO-cm.	HAID ALT-	410. COLE	_		432	15-Bar		8cm		801
	Rrt				CaCO 3		piec	elec	Day stee	₫/	Pot	Bar	Pct	Pert	Har to 15-Bar In /In	Paste	1:1	1:10



Soil Type: Nepesta silty clay loss

Soil Nos.: 960Colo-50-9

Location: 150 feet north and 66 feet west of south quarter corner, Sec. 22, T228, R43W, Provers County, Colorado.

Klevation: 3,540 feet. Climate: Continental climate, average annual precipitation 13 to 15 inches, frost
Hysiographic Position: Upland. free season 165 days.

Relief: Mearly level, 0-1 percent slopes.

Drainage: Good. Moisture: Moist. Water Table: None. Stominess: None.

Salt or Alkali: Possible slight salinity.

Erosion: Siltation.

Present Use: Irrigated cropland - corn.

Parent Material: Loss.

Described by: James P. Pannell, November, 1960.

Horizon and Lincoln Lab. No.

Apl 0 to 7 inches. Grayish brown (10YR 5/2 dry) to dark grayish brown (10YR 3.5/2 moist and crushed) silty clay logs; moderate medium granular structure; dry hard, moist firm; strongly effervescent; clear smooth boundary.

402 7 to 11 inches. Crayish brown (10YR 5/2 dry) to dark grayish brown (10YR 3.5/2 moist and crushed) silty clay loss; moderate medium angular and subangular blocky structure to moderate medium granular; dry hard, moist firm; strongly effervescent; clear smooth boundary.

R21 11 to 16 inches. Grayish brown (10YR 5/2 dry) to dark grayish brown (10YR 3.5/2 moist and 4/2.5 moist crushed) slity clay loss; moderate medium primmatic and subangular blocky structure to moderate fine subangular blocky; dry hard, moist friable; slightly effervescent; thin nearly continuous clay skins; clear mooth boundary.

16 to 26 inches. Grayish brown (10YR 5.5/2 dry) to dark grayish brown (10YR 4/2 moist and 4/2.5 moist crushed) silty clay loss; weak to moderate fine subangular blocky structure; dry hard, moist friable; strongly effervescent; thin nearly continuous clay skins; clear smooth boundary.

B3ca. 26 to 39 inches. Light grayish brown (10YR 6/2 dry) to dark grayish brown (10YR 4/2 moist and crushed) silty clay loan; weak fine subangular blocky structure; dry slightly hard, moist very friable; violently efferweecent; thin patchy clay skins and few line spots; gradual smooth boundary.

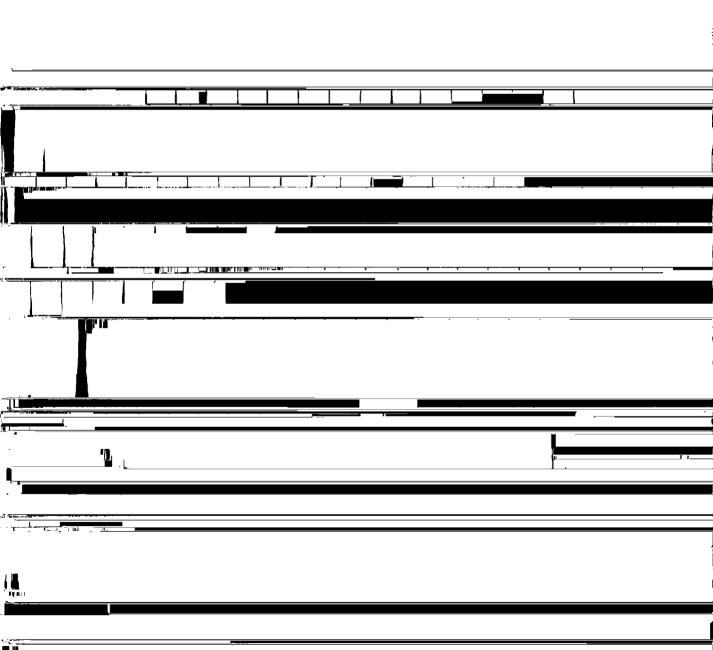
Cea 39 to 50 inches. Fale brown (10YR 6/3 dry) to brown (10YR 5/3 moist and crushed) silt losm; massive; dry soft, moist very friable; violently effervescent; few lime spots; gradual smooth boundary.

C 50 to 60 inches plus. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist and crushed) silt loss; massive; dry soft, moist very friable; violently efferwescent.

SOIL Mapesta silty clay loam a/ SOIL Nos. 850Colo-50-10 LOCATION Provers County, Colorado

SOIL SURVEY LABORATORY Tincoln, Nebraska LAB. Nos. 12686-12689 January 1966

		19	Qa.					Siz	e class and	particle dia	meter (mm	)	•	RAL			
			Total				Sand			Si	It			Clay	3Ala	Coa	rse fragments
Depth (in.)	Horizon	\$and (2-0.05)	Sift (0.05– 0.002)	Clay (= 0.002)	Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25	1	Very fine (0.1–0.05)	0.05-0.02	Int. III (0.02- 0.002)	Int. 11 (0.2–0.02)	(2 0.1)	arbon ate	Non-	2#2 (<0.9)	2 - 19 19 -76 Pct. of < 76 mm
0-5	Ap.l	9.0	36.6	54.4	0.2b	0.3e	0.30	1.50	6.70	14.4	22.2	22.2	2.3	2	52	-	
5-8	Ap2	9.5	38.7	51.8	*	0.3c	0.40	1.4c	7.4c	16.2	22.5	24.	2.1	2	50	Tr.	
8-13	AB	7.7	37.5	54.8	0.1	0.20	0.20	1.10	6.1e	13.9	23.6	20.8	1.6	2	53	Tr.	T T
12-01	1991	12.L	17.6	20.A	_	0.30	0.10	3.50	11.90	98.5	10.1	ko. 1	9.9	9	37	The.	



Soil Type: Neposta silty clay loss
Soil Not.: \$500slo-90-10
Location: 0.45 mile east and 0.15 mile north of southwest corner, Sec. 19, T218, NATW, Provers County, Colorado.
Climate: Continental climate, average annual precipitation 13 to 15 inches, frost-free season 165 days.

Elevation: 3,825 feet. Parent Material: Loss.

Physiographic Position: Upland.

Relief: Mearly level, 0-1 percent slopes.

Brainage: Good. Moisture: Moist. Water Table: Hone. Stoniness: Mone.

Salt or Albali: Possible slight salinity.

Progion: Siltation.

Present Use: Irrigated cropland. Described by: James P. Pannell, August, 1960.

Horison and Lincoln lab. No.

0 to 5 inches. Grayish brown (10YR 5/2 dry) to dark grayish brown (10YR 3.5/2 moist and crushed) silty Apl 14686 clay loss; moderate fine granular structure; dry hard, moist firm; strongly effervescent; clear smooth

5 to 8 inches. Grayish-brown (10TR 5/2 dry) to dark grayish brown (10TR 3.5/2 moist and crushed) silty clay loss; weak to moderate medium subengular blocky structure to moderate medium granular; dry bard, др2 13687

moist firm; violently efferwescent; thin patchy clay skins; clear smooth boundary.

8 to 13 inches. Gravish brown (10TR 5/2 dry) to dark brown (10TR 3/2.5 moist) dark gravish-brown (10TR

13 to 21 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist and 3.5/2 moist 34689 crushed) silty clay loss; moderate medium and fine primmatic structure to moderate medium subangular blocky; 

SOIL SURVE	Y LABORATORY	Mincoln, Nebr.	3/18/58
SOIL TYPE	Hystrom .LCC	CATION Clear Cr	eek County, Colorado
SOIL NOS.	S55Colo-1.0-1	LAB. NOS.	2903-2908

	į	1F	la	PARTI	CLE SIZ	E DISTRIB	UTION (in	л∞n.) (ра	r cent)	3AT		
DEPTH INCHES	HORIZON	VERY COAFSE SAND 2-1	COARSE SAND 1-0,5	SAND	FINE SAND 0.25-0,10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY	0.2-0.02	anz.aoo <b>ć</b>	2A2 > 2 <19mm.	TEXTURAL CLASS
0-3		47.1	13.1	2.6	2.7	1.5	12.9	20.1	1.0	14.8	5	scl
3-14	į	12.9	8.6	2.9	4.2	2.8	40.5	28.1	23.7	22.0	5	cl
14-17	DL	43.5	18.6	4.6	5.3	3.1	11.8	13.1	10.3	7.4	8	cosl
17-23	D5	51.0	10.2	3.9	6.5	2.0	11.7	14.7	8.8	8.1	25	cosl
23-29	D3	69.7	9.2	13	1.5	1.0	8.1	9.2	3.8	6.1	52	lcos
<u> 20- 3)</u> t	j nje	<u> </u>	1,42	5.2	7.2	5.2	<u>17.9</u>	0.2	15.7	_5_ در	33	_cosl_

piners —

in -

Soil Type: Nystrom peat Soil Nos.: 955Colo-10-1

Location: Approximately the NW 1/4 of the NW 1/4 of Sec. 22, T3S, K76W, Clear Creek County, Colorado, approximately

1 mile east of the pass on the Jones Pass road. Physiographic Position: Alpine areas on mountain crest.
Topography: Nearly level to slightly depressed basin.
Drainage: Poorly drained.

Vegetation: Willow, water-loving sedges, tufted hair grass.

Use: Grazing land.

Collected by: A. Aandahl, J. Retzer, H. Bindschadler, E. M. Payne, August, 1955.

Horizon and **Lincoln** Iab. No.

O to 3 inches. Very dark gray (10YR 3/1 dry) to black (10YR 2/0 moist) fibrous grass and sedge peat. The outline of individual plant remains are clearly visible in this horizon. Extremely acid in reaction. Lower boundary gradual and smooth. 2903

3 to 14 inches. Very dark gray (10YR 3/1.5 dry) to black (10YR 2/1 moist) fibrous grass and sedge peat; the outline of individual plant remains are clearly visible in this horizon; extremely acid; lower boundary clear and wavy. 2904

14 to 17 inches. Hight brownish gray (10YR 6/2 dry) to dark grayish brown (10YR 4/2 moist) fine grayelly mandy losm: slightly brown dry, very friable when moist: weak coarse granular structure: 2905

extremely acid in reaction; lower boundary clear and wavy.

17 to 23 inches. Very pale brown (10YR 7/4 dry) to yellowish brown (10YR 5/4 moist) gravelly sandy clay losm; hard when dry, friable when moist; very weak medium subangular blocky structure; extremely acid; the horizon contains common numbers of medium-sized distinct 10YR 3.5/4 and 10YR 5/6 mottles DD. 2906 and stains; lower boundary clear and wavy.

23 to 29 inches. Very pale brown (10YR 7/3 dry) to yellowish brown (10YR 5/4 moist) gravelly loam; slightly hard when dry, very frighle when moist; massive; strongly acid in reaction; lower boundary D3 2907 clear and smooth.

29 to 34 inches. Very pale brown (10YR 7/5 dry) to yellowish brown (10YR 5/5 moist) gravelly sandy ໞ 2908 loam; slightly hard when dry, very friable when moist; massive; medium acid in reaction.

SOIL TYPE * Parlin LOCATION Gunnison County, Colorado channery loam

SOIL NOS. S59Colo-26-1 LAB. NOS. 11987-11993

***************************************	***************************************	1.Bl		PARTI	CLE SIZ	E DISTRIB	UTION (in	mm.) (pe		***************************************	3A1	
DEPTH INCHES	HORIZON	VERY COARSE	COARSE	MEDIUM	FINE	VERY FINE					2A2	TEXTURAL CLASS
				SAND	SAND	SAND	SILT	CLAY			> 2	
0-4	All	2-1 6 <b>-1</b>	1-0.5 5.6	0.5-0.25 3 <b>.</b> 2	6.3		0.05-0.002 50 <b>.</b> 6	< 0.002 14.6	46.8	Q02-Q002	35 ∠⊤Ammi	
4-10	Al2	4.4	4.3	2.7	5.6	13.6 12.1	49.1	21.8	45.1			<b>sil</b> 1
10-19	Bl	4.6	3.7	2.0	4.5	11.4	40.8	33.0	39-3	15.5	58	cl
1.9-27	B2t	4.3	5.0	3.0	6.0	12.2	38.5	31.0	39.3			cl
27 <b>-32</b> 32 <b>-39</b>	B3 C	3.8 5.0	4.5 5.0	3.0 3.4	5.8 7.2	11.6 12.7	41.5 40.5	29.8 26.2	38 <b>.</b> 9 39.8	17.4 17.4		cl l
39-53	B2b	3.0	3.7	2.6	5.8	<u>11.8</u>	43.1	30.0	38.8		25	cl
	ρH		OPG	NIC MA	 	6 <b>Cla</b>	69688747378888978988	6Ele	11,411010,1111411	MOIST	URE TE	MSIONS
; !	- Ki'				; · · · · · · ·	Free					Y	4B2
8Cla	1:5	1:10	6A1a ORGANIC CARBON	NITRO-	C/N	Iron		CoCO3		1/10 ATMOS.	1/3 ATMOS.	15 ATAGS.
; ; 1:1	1;3	1:10	% %	GEN %	O N	Fe ₂ 0 ₃ %		- GIGHT		% %	* *	%
7.0				0.151	13	1.2		< 0.1				7.2
7.0			1.20	0.107	ıŭ	1.2		< 0.1				8.9
7.0				0.060	10	1.4		< 0.1				13.7
7.7 8.0			0.23	0.032		1.4 1.4		< 0.1 0.2				13.4 12.7
8.2			0.19			1.3		0.3				12.5
8.2			0.08			1.3		0.4				13.3
- CA3-		EXTRAC	TARLE	CATIONS	i !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	BASE	Base	i Amerikan I Carea		********	*****************	
5Ala CATION		602b	6Hla	6P2a	602a	SAT.		Sum Ext.	Sec.	Ca/Mg		0. D.
CATION EXCHANGE CAPACITY	Ca	Ma	н	No	K	NHLÔAC EXCH	on Sum			527.25		Bulk
NH40Ac			olents per	100a, sof	i		Cations		ions	am		Density
34.0	11.7			< 0.1	1.2	.5Cl 107	_5G3 83	15.0	5A3a. 18.1	.813 5.6		_g/_cc
15.8	13.1			< 0.1	0.6	104	85	16.5		4.7		į
23.1	18.5	4.2	2.7	0.1	0.6	101	90	23.4	26.1	4.4		
23.1	20.6		1.7	0.2	0.4	110	94	25.5	27.2	4.8		Į
20.4		4.0 3.7	1.0	0.2				İ				Į
21.7		4.3	0.2	0.6	0.6				Į			•
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Soil Type: *Parlin channery loam Date: Sept. 1959, by J. Nish by J. Nishimura, D. Boyer, E. Kleven, W. Goddard, J.S. Allen, L. Juve, and C. J. Fox

Area: Ournison County, Colorado
Location: NW2 - SE2 of Sec. 22, T. 19 N., R. 2 E. photo 2991
Parent material: Residual and partly colluvial from felsitic (rhyolite) rocks. Physiography: Side slope of smoothly rounded mountain at an elevation of

approximately 8500 feet.

Topography: Northeast exposure with 26 percent slope.

Drainage: Excessive

Vegetation: Big sagebrush (Artemisia tridenteta), serviceberry, occasional cacti, very sparse grasses consisting mainly of needle and thread (Stipa Comata)

Vse: Rangeland Soil Nos.: S-59-Colo-26-1 Described by: Charles J. Fox.

Lincoln Borison

Lab. Ro.

11987 A₁₁ 0-iı

Brown (10YR 4/3 dry) to dark brown (10YR 3/3 moist) weak inches very fine granular loam; soft when dry, very friable when moist; about 5 percent angular gravel; approximate pH 6.5; roots plentiful; lower boundary clear and smooth.

11988 412 4-10 inches

Dark grayish brown (10TR 4/2 dry) to very dark grayish brown (10YR 3/2 moist) loam; weak medium angular blocky structure crushing to moderate fine granules; slightly hard when dry, driable when moist, slightly sticky when wet; about 3 percent of angular gravel; approximate pH 6.0; roots plantiful; lower boundary clear and wavy.

11989 B₁ 10-19 inches Brown (7.5TR 5/4 dry) to dark brown (7.5TR 4/4 moist) gravelly clay loam; moderate medium subangular blocky structure crushing to moderate fine granules; hard when dry, firm when moist, and plastic when wet; thin clay films; approximate pH 6.5; roots few; about 15 percent of volume consists of gravel; lower boundary gradual and smooth.

11990 B_{2t} 19-27 inches

Brown (7.5TR 5/4 dry) to dark brown (7.5TR L/L moist) clay loam: moderate medium subangular blocky structure crushing to strong fine granules; very hard when dry, very firm when moist, and very plastic when wet; thin continuous clay films; spproximate pH 6.0; about 3 percent angular gravel; roots few; lower boundary gradual and smooth.

11991 B₃ 27-32 inches Light brown (7.5YR 6/4 dry) to brown (7.5YR 5/4 moist) clay losm; moderate medium angular blocky structure crushing to moderate fine granules; thin discontinuous clay films; hard when dry, firm when moist; plastic when wet; about 3 percent angular gravel; approximate pH 6.5; matrix of soil noncal-careous but weakly calcareous in spots and seams; roots few; lower boundary clear and smooth.

11992 C 32-39 inches

Light brown (7.5YR 6/4 dry) to brown (7.5YR 5/4 moist) light clay loam; weak medium angular blocky structure that crushes to moderate fine granules; slightly hard when dry, friable when moist, plastic when wet; approximately 3 percent of this horizon is angular gravel; calcareous in spots and seams; approximate pH 8.0; roots few; lower boundary gradual and smooth.

B_{2b} 11993 39-53

Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) clay inches loam; moderate medium angular blocky structure crushing to moderate medium granules; hard when dry, firm when moist, plastic when wet; thin discontinuous clay films; some tiny black iron or manganese concretions; calcareous in spots and seams; no roots; approximately pH 8.0; lower boundary gradual and smooth.

B₃5 53-59

Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/k moist) heavy inches loam; weak medium angular blocky structure crushing to weak medium granules; slightly hard when dry; frieble when moist, slightly sticky when wet; about 3 percent of this horison is lims coated gravel; calcareous in spots and seams; approximate pH 8.0; a few black concretions; some old roots and root channels.

Bureau of Public Roads Samples: 4-10 inches, 10-19 inches, 32-39 inches.

SOIL SURVEY LABORATORY Lincoln, Nebr. December 1958 SOIL TYPE *Penitente loam LOCATION Boulder County, Colorado

SOIL NOS.

857Colo-7-1 LAB. NOS. 7568-7573

	9H &	Cla	ORGA	INIC MA	TTER	Free	1912011011011011011	********************	andibron410000141	MOIST	URE TE	NSIONS
0-4½ ½-8 8-13 3-18 8-24+	A112 A12 B1r B3 C		14.9a 13.6a 8.9a	8.1a 7.9a 6.4a	8.3a 16.0a 15.9a 13.9a 16.1a	9.8a 11.0a 10.5a	51.3 27.3 35.6 50.2 26.2	25.0 8.3 4.2 5.6 5.7	31.5 35.4	14.0 20.0 30.4	36 35	sil cosl cosl sil cosl
DEPTH INCHES	HURIZON	VERY CCAPSE SAND 2-1	COARSE SAND 1.0.5	MEDIUM \$AND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE \$AND 0.10-0.05	SILT 0,05-0,002	ÇLAY < 0,002	0, 2-0,02	Q02-Q002	> 2	TEXTURA CLASS

Soil Type: *Penitente loam

Location: Niwot Ridge, approximately 200 west of the Tundra Laboratory,

Boulder County, Colorado Date of Sampling: July 1, 1957

Collectors: W. Osburn, A. J. Cline Described by: A. J. Cline

Physiographic Position: Alpine Ridge

Topography: Gently undulating ridge top having approximately 5 percent gradient.

Drainage: Well drained

Vegetation: Thick Kobresia bellardi sod with some Carex drummondi.

Use: National forest land. (Alpine Experimental Fields)

Soil Nos.: S-57-Colo-7-1 Lincoln Laboratory Nos.: 7568-7573

- 12-0 inchesThis is an organic horizon made up of undecomposed and partially Ao, Aoo decomposed plant refuse principally Kobresia roots and plant remains.

  LSI 7560
- 0-42 inchesVery dark gray (10YR 3/1 dry) to black (10YR 2/1 moist) loam;
- All slightly hard when dry, very friable when moist; weak to moderate
- LSI coarse crumb structure; noncalcareous; lower boundary clear and
- 7569 smooth. Temperature 50° F.
- 42-8 inches very dark grayish brown (10YR 3/2 dry) to very dark brown (10YR Al2 2/2 moist) loam; slightly hard when dry, very friable when moist;
- LSI weak fine subangular blocky structure breaking to moderate coarse crumbs; noncalcareous, approximate pH 5.6; lower boundary gradual
- 7570 and wavy. Temperature 45° F.
- 8-13 inches Brown (10YR 5/3 dry) to dark brown (10YR 3/3 moist) stony loam;
  Bir hard when dry, very friable when moist; weak to moderate medium and
- fine subangular blocky structure; noncalcareous, approximate pH 4.6;
  LSI there are a few very thin and patchy clay skins visible only on a
- 7571 few surfaces; lower boundary gradual and smooth. Approximately 25% of this horizon is stone; the underside of the stone fragments are thickly costed with a dark brown (lOYR 3/3 and lOYR 2/2 coating). Temperature 35° F.
- 13-18inchesPale brown (10YR 6/3 dry) to brown or dark brown (10YR 4/3 moist)

  B3 stony loam; hard when dry, very friable when moist; weak to moderate medium and fine subangular blocky structure; noncalcareous, appearabilists imate pH 4.4; there are a few very thin and patchy clay skins visible on some of the aggregate faces; the temperature of this horizon on the day sampled was approximately 32°; approximately 102 of the
- on some of the aggregate faces; the temperature of this horizon the day sempled was approximately 32°; approximately 40% of the horizon is stone; the underside of the stones is coated with a (10YR 3/3 coating); lower boundary diffuse and wavy.
- 18-24 / Light yellowish brown (2.5Y 6/3 dry) to olive brown (2.5Y 4/3 moist)

  C inchessiony sandy loam; hard when dry, very friable when moist; very weak medium subangular blocky structure or massive; noncalcareous,

  LSI approximate pH 4.8; about 75% of this horizon is stone; there is some coating of (10YR 3/3) materials on the underside of the rocks but somewhat less than in the horizon above. Temperature 27° F.

	TYPE.	. <u> Fenitoer</u>	re Toan								
8	oil nos.	S57	Colo-7-2	<u>}</u> , <u>.</u>	L	AB. I	10S.	75	574-757	78	
<b>56251613101</b> 010+ (4440.1471	<del>074</del> 1153064-10198614,1	<u></u>	*******************************	**************	42 <b>004446200</b> 00		** 261. **********	178 (41 754) (14 4 7 14 7			10 <del>17-111-11</del>
ļ	<b> </b>	1Bla	PARTI	CLE SIZE		TION (in	<u> </u>	r cent)	3AJ	2A2	-
DEPTH INCHES	HORIZON C	VERY DARSE COAR SAND SAN	SAND	SAND	VERY FINE SAND	SILT	CLAY		•	> 2	CLASS
ļ.,,,	<b></b>	2-1 1-0.	5 0.5-0.25	0, 25-0, 10	10-0.05	.05-0.002	< 0.002	C, 2-0 02	ac2-accz	(<) 9m	<b>ن</b>
1-0 0-5	A _O A _{OO}	6.2a 7.5	a 4.7a	7.9a	5.7a	47.2	20.8	30.9	26.0	Tr.	1
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Soil Type: *Penitente loam

Location: Niwot Ridge, approximately 500 yards east of the Tundra Laboratory. Boulder County, Colorado

Date of Sampling: July 1, 1957

Described by: A. J. Cline

Collectors: W. Osburn, A. J. Cline Physiographic Position: Alpine Ridge

Topography: Moderately steeply sloping ridge crest of about 8 percent gradient.

Drainage: Moderately well drained.

Vegetation: Thick Kobresia bellardi sod and a few small sedges

Use: National Forest lands (Alpine Experimental Fields)

Soil Nos.: S-57-Colo-7-2

LSL

7575

Lincoln Laboratory Nos.: 7574-7578

1-0 inches Organic material consisting of undecomposed and partially decom-A, A posed Kobresia roots and plant remains.

0-5 inches Very dark gray (10YR 3/1 dry) to black (10YR 2/1 moist) loam; BULL MADE GAME warm friable when mainte mest to maderate annimes

crumb structure; noncalcareous, approximate pH 5.8; lower boundary clear and wavy. On the date sampled the temperature of this horizon was 500 F.

5-9 inches Pale brown (10YR 6/3 dry) to brown or dark brown (10YR 4/3 moist)  $^{\mathrm{B}}$ ir loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure, breaking to weak to moderate very fine LSL subangular blocks; noncalcareous, approximate pH 4.6; on the date 7576 of sampling the temperature of this horizon was 42° F; lower boundary clear and smooth.

9-14 inches Pale yellow (2.5Y 7/3 dry) to clive brown (2.5Y 4.5/4 moist) loam; slightly hard when dry, very friable when moist; weak medium sub-BC angular blocky structure, breaking to weak to moderate very fine LSL subangular blocks; noncalcareous, approximate pH 4.4; on the date 7577 of sampling the temperature of this horizon was 30° F; about 15% of this horizon was stone; the underside of the rocks had a dark brown (10YR 3/3 coating); lower boundary gradual and wavy.

14 / inches Pale yellow (2.5Y 7/3 dry) to olive brown or light olive brown (2.5Y 4.5/4 moist) stony loam or very fine sandy loam; hard when dry, very friable when moist; massive; noncalcareous, approximate pH h.h; on the date of sampling the temperature of this horizon LSL was 280 F; approximately 50% of this horizon is stone; the under-7578 side of the rocks is coated with a dark brown (10YR 3/3 coating).

	\$0IL	*Peyton se	andy loan	<b>I</b>	SOIL	Nos. <u>5630</u>	010-18-5	_ LOCATION	Douglas Cou	aty, Colorado	
	SOIL SURVEY	LABORATORY_	Lincol	n, Nebraska				LAB. Nos.	18662-18669	March 1967	
	Gaparal	<u>Methoda</u>	14. 1RH	h. 241. 2R							
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7.5											

Soil Type : *Peyton sandy loam

Soil Nos. : 863Colo-18-5

Location : 400 feet south, 1200 feet east of the northwest corner of Section 21, T10S, R66W, Douglas County, Colorado

: Continental, average annual precipitation 20 inches. Mean annual temperature 44 degrees F. Climate

Growing season 120 days. Elevation 7200 feet.

Vegetation : Native pasture; blue grama, needleandthread, western wheatgrass, mountain muhly, Junegrass

Parent Material: Dawson arkose or outwash material from the Dawson

Physiographic

Position : Upland

Relief : Sloping, 12 percent west facing slope; slope about 300 feet in length, pit near the center of

the slope

Drainage : Surface drainage is rapid; internal drainage is moderate; intake rates are moderate to rapid

Moisture : Moist to 7 inches and below 4 feet; usually moist throughout

· None Watertable

Staniness : Few fine water worn gravels throughout, mainly feldspar and quartz

Salt or Alkali : None observed

: Slight water erosion Erosion

: R. K. Dansdill, J. B. Brown, R. H. Jordan, and L. G. Shields; August 14, 1963 Sampled by

Described by . J. B. Brown

Horizon and Lincoln Lab. No.

0 to 7 inches. Very dark brown (10YR 2/2, moist) sandy losm; dark grayish brown (10YR 1/2, dry); 18662 weak coarse subangular blocky structure; hard when dry, loose when moist; noncalcareous; gradual

7 to 15 inches. Very dark brown (10YR 2/2 moist) sandy loam; dark gravish brown (10YR 4/2 dry); 18663 weak coarse subangular blocky structure; hard when dry, loose when moist; noncalcareous; clear

A3 18664 15 to 20 inches. Brown (10YR 4/3 moist) sandy loam; pale brown (10YR 5/3 dry); weak coarse subangular blocky structure; hard when dry, loose when moist; noncalcareous; clear smooth boundary.

20 to 24 inches. Brown (10YR 4/3 moist) and brown (10YR 5/3 dry); heavy coarse sandy loam; moderate 18665 medium prisms breaking to moderate medium subangular blocks; very hard when dry, friable when moist; noncalcareous; thin nearly continuous clay films; clear smooth boundary.

24 to 34 inches. Dark yellowish brown (10YR 4/4 moist) sandy clay loam; yellowish brown (10YR 5/4 B221 18666 dry); moderate coarse prisms breaking to moderate medium and coarse angular blocks; extremely hard when dry, firm when moist; noncalcareous; thin nearly continuous clay films; clear smooth boundary.

**B**3 34 to 41 inches. Yellowish brown (10YR 5/4 moist) coarse sandy loam; pale brown (10YR 6/3 dry); 18667 weak coarse subangular blocky structure; extremely hard when dry, very friable when moist noncalcareous; thin patchy clay films on vertical faces; few weakly cemented sandy bands 1/2 inch thick; gradual smooth boundary.

41 to 48 inches. Pale brown (10YR 6/3 moist) coarse sand; very pale brown (10YR 7/3 dry); massive

structure; hard when dry, loose when moist; noncalcareous; clear smooth boundary. 48 to 68 inches. Light brownish gray (2 1/2Y 6/2 moist) coarse sand; light gray (2 1/2Y 7/2 dry); 18669

massive structure; hard when dry, loose when moist; noncalcareous; weakly cemented sandy bands 1/4 to 1 1/2 inches thick and 1 to 2 inches apart are present throughout the C horizon.

Remarks: The light colored layer at 15 to 20 inches may be an A2 rather than an A3 horizon; it is seldom visible when the sandy loam A horizon is less than 12 inches thick. Feldspar sands and gravels are numerous throughout the profile. These soils are extensive in Douglas County at elevations of more than 6700 feet.

Bureau of Public Roads Samples: Al2, B22t, and C2 horizons.

18668

Observations on fine sand (Method 7BL): All, B22t, and Cl horizons. 65 to 70 percent feldspar, 20 to 25 percent quartz, and 5 to 10 percent accessory minerals. Potassium feldspar (orthoclase) predominates; a few plagioclase were Accessory minerals identified: mica, amphibole (horablende), zircon, opeques, chert, and plant opal (All Observed. horizon).

Clay mineralogy (Method 7Al, 7A2): C2 horizon. The C2 horizon contains a moderate amount of kaolinite and small amounts of montmorillonite and mica (or illite). The mica and kaolinite are well crystallized; the montmorillonite is of fair crystalline quality. The fine clay is poorly crystallized montmorillonite and kaolinite. The clay mineralogy is mixed.

*Peyton sandy loam SOIL Nos. S63Colo-18-6 LOCATION Douglas County, Colorado SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 18670-18678 March 1967 General Methods: 1A, 1Blb, 2A1, 2B Size class and particle diameter (mm) 3A1 Total A2 Coarse fragments & Silt 3А1ъ 3B2 2 3B1 Sand Silt Clay Verv Coarse Medium Fine Very fine Int. III Int. II Horizon Depth (1-0.5) (0.5-0.25) (0.25-0.1) (0.1-0.05) (0.05-0.02) (0.02-0.02) (0.2-0.02) (2-0.1) (< 19) (Vol. (29) Pet. (2-0.05) (0.05k0.0002 ( < 0.002) (In.) ATT 19.3 8.6 | 12.3 | 26.8 20.6 12.9 48.8 49.4 0 - 470.0 110.7 5 4-11 A1,2 71.9 16.9 11.2 1.8 8.8 | 12.9 27.3 21.1 10.5 6.4 47.7 50.8 3 2 2.3 8.3 20.3 11.3 21.0 12.7 11-14 **A**3 66.8 17.8 15.4 11.0 24.9 6.5 46.0 46.5 2 3 14-18 ŘŽIt 18.1 18.9 1.9 10.0 23,2 63.0 6.9 5.4 47.3 42.0 27.2 25.3 5.8 6.9 18-30 1.0 4.9 21.4 | 15.6 45.7 B22t 47.5 52.6 14.4 26.1 11.6 tr 121.3 B23t 15.8 30-41 26.1 1.2 6.2 22.5 16.2 48.5 9.9 30.1 tr 22.1 19.3 32.7 22.4 22.8 41-53 124E 44.9 2.0 6.0 4.4 10.4 13.4 48.0 tr 53-64 8.8 69.4 15.2 15.4 8.7 IIB2 16.4 14.4 16.2 13.6 9.2 6.0 32.2 55.8 20 12 64-72 IIIC 52.3 25.8 21.9 4.2 8.7 7.0 15.6 16.8 13.1 12.7 39.2 35.5 3 6Ala 6Bla 6E2a **Bulk density** 4D1 Water content pΗ 4B4 Ext. 4Ala 4Ald 4Ald 4Alb 4Blc 4B2 4C1 8Cla Depth Organic Nitrogen C/N Carbonate Iron as CaCO₃Field Btate 1/3-1/3-Air Field 1/3-15-1/3-to carbon <u>b</u> (In.) (1:1)Dry COLE State Bar Bar 15-Bar Bar Bar BR 7e ¢ Pct Pct. Pct. Pct e√cc Pct Pct. Pet g/cc 1.45 5.8 0-4 1.93 0.141 14 1.43 1.44 1.45 13.4 13.8 5.4 0.12 1.44 1.46 1.42 4-11 0.99 lo.090 1.1 1.39 0.003 4.0 13.1 5.0 0.12 6.2 1.50 0.062 11-14 0.55 Q 1.52 1.43 1.46 0.010 4.4 0.13 6.4 14-18 0.51 0.052 10 1.56 1.50 1.55 0.010 4.8 13.8 7.2 0.10 6.7 18-30 0.37 0.039 1.73 1.60 1.74 0.028 8.1 17.5 10.0 0.12 6.5 6.6 1.60 1.62 1باً ــ30 0.21 52 1.60 1.62 0.017 6.6 16.4 8.5 9.1 0.12-(s) -(s) 41-53 1.52 7.6 16.3 0.020 0.11 6.8 1.38 6.3 53-64 0.10 1.66 1.59 1.66 0.014 7.7 14.3 0.13 7.0 1.44 1.48 0.024 64-72 0.06 1.56 1.59 19.6 9.0 0.16 6Hla Cat. Emh.Cap. 8D3 5Bla Base saturation Extractable bases 5C3 5C1 6M2a 602a 6P2a 602a 5A3a 5Ala Depth Ext. Sum Sum (in.) Sum Acidity Ostions NR, OAc Ca/Mg Cations ELOA: Mg meg/100 s 1.2 4.7 80 0-4 0.5 7.2 11.9 9.0 4.6 61 2.9 2.2 4-11 6.2 0.3 8.1 11.0 8.6 74 81 94 1.6 tr 3.9 6.8 2.3 99 9.4 11.6 3.0 <u> 11-14</u> tr 0.3 9.5 83 2.5 14.9 14-18 7.7 tr 0.3 12.4 10.9 1.8 114 2.9 84 18-30 10.5 3.8 0.1 0.4 14.8 17.7 16.2 2.8 91 30-41 12.0 0.1 16.7 13.8 28 121 41-53 11.2 4.1 0.2 0.4 15.9 15.0 2.7 106 53-64 7.4 2.6 0.1 0.2 10.3 9.8 2.8 105 64-72 0.2 15.0 13.9 108 Ratios to Clay 8D1 a. No greater-than-19-mm. material to 53 inches, less than 10 percent Depth by volume from 53-72 inches. 10 kg/m to 60 inches (Method 6A). NHLOAC 15.Bar (ln.) Water Calculated to include volume but not weight of 2-19 mm. material (Method 3B2). 0-4 0.84 0.50 0.77 0.45 4-11 <u> 11-14</u> 0.36 0.58 0.38 14-18 18-30 30-41 0.64 0.40 0.65 0.40 41-53 0.67 0.41 53-64 0.41 0.64 64-72 0.630.41

165 *Peyton sandy loam Soil Type Soil Nos. 863Colo-18-6 1270 feet north, 1620 feet west of the east quarter corner of Section 33, T108, R65W, Douglas Location County, Colorado Climate Continental, average annual precipitation 20 inches. Mean annual temperature 144 degrees F. Growing season 120 days. Elevation 7200 feet. Vegetation : Native pasture; blue grams, western wheatgrass, fringed sage and snakeweed
Parent Material : Aeolian, probably local, from the Dawson arkose formation Physiographic Position Sloping, 10 percent southeast facing slope. Slope about 100 feet in length; pit dug near the Relief base of the slope Surface drainage rapid; internal drainage moderate; moderate to rapid intake rate Moist to 10 inches and below 36 inches. Usually moist throughout Drainage Moisture Watertable None Stoniness None Salt or Alkali None Erosion Slight water erosion R. K. Dansdill, J. B. Brown, R. H. Jordan, and L. G. Shields; August 14, 1963 Sampled by Described by J. B. Brown Horizon and Lincoln Lab. No. 0 to 4 inches. Very dark brown (10YR 2/2 moist) sandy loam; dark grayish brown (10YR 4/2 dry); weak fine granular structure; hard when dry, very friable when moist; noncalcareous; much rodent and ant activity in this horizon; clear smooth boundary. 18670 4 to 11 inches. Very dark brown (10YR 2/2 moist) sandy loam; dark grayish brown (10YR 4/2 dry); very weak coarse subangular blocky structure; hard when dry, very friable when moist; rodent 412 18671 and ant activity evident; clear smooth boundary. 11 to 14 inches. Dark gray (10YR 4/1 moist and crushed) sandy loam: gravish brown (10YR 5/2 dry): 18672 very weak coarse subangular blocky structure; hard when dry, very friable when moist; clear smooth boundary. B21t 14 to 18 inches. Brown (10YR 4/3 moist) heavy sandy loam; brown (10YR 5/3 dry); weak to moderate 18673 coarse subangular blocky structure; very hard when dry, firm when moist; thin patchy clay films with some sand grains on ped surfaces; clear smooth boundary. 18 to 30 inches. Brown (1078 1/3 moist and crushed) and light_wellowish brown (1078 6/1 drw) B22t

extremely hard when dry, very firm when moist; noncalcareous; thin nearly continuous clay films; few sandy losm pockets; gradual smooth boundary.

B23t 18675

£ ...

30 to 41 inches. Brown (10YR 5/3 moist) sandy clay loam; pale brown (10YR 6/3 dry); moderate medium to coarse prisms breaking to moderate medium to coarse angular blocks; very hard when dry, firm when moist; noncalcareous; thin patchy clay films; few bands about 1/4 inch wide of sandy loam material; gradual smooth boundary.

B24t 41 to 53 inches. Brown (10YR 5/3 moist) sandy clay lcam; pale brown (10YR 6/3 dry); weak coarse 18676 prisms breaking to weak to moderate coarse subangular blocks; hard when dry, firm when moist;

SOIL SURVEY LABORATORY Lincoln, Nebr. January 1960 SOIL TYPE Platner LOCATION Morgan County, Colorado fine sandy loam SOIL NOS. S59Colo-44-9 LAB. NOS. 10887-10897 1BDs. PARTICLE SIZE DISTRIBUTION (in min.) (per cent) 3A1 DEPTH INCHES HORIZON COARSE COARSE MEDIUM SAND FINE SILT CLAY 0.5-0.25 0.25-0.10 0.10-0.05 0.95-0.002 < 0.002 0.2-0.02 0.2-0.002 19mm.)
6.9 16.5 21.4 30.4 14.8 49.7 11.5 Tr.
6.8 15.7 17.9 30.0 19.1 43.6 13.4 3
7.4 17.6 18.0 26.0 22.6 45.6 8.7 Tr. 2.8 0-3½ All 7.2 6.8 Al2 3.7 A2B 2.4 6.0 scl 7.4 B2lt 3.8 7.7 17.7 16.4 21.8 25.2 40.1 8.4 | 4 scl B221, 20.0

Soil Type: Flatner fine sandy loam Soil Nos.: S59Colo-44-9

Field classification: Chestnut.

IDeation: 75 feet north, 1,350 feet east, west quarter corner, Sec. 3, T6N, R58W, Morgan County, Colorado.

Hoto: TM-1P-48.

Climate: Continental, average annual precipitation 13-15 inches. Elevation 4,750 feet. Frost-free season 146 days.

Mean annual temperature 48° F.

Vegetation: Blue grams, buffalograss, caoti.

Physiographic position: Upland.

Parent material: Tertiary outwash.

Relief: Gently sloping 1-2 percent slope.

Salt or alkali: Mone observed except calcium carbonate. Erosion: Described by: Clayton F. Spears, May 7, 1959.
Remarks: Many krotovinas of insects and worms from Relithrough the Coa. Erosion: Slight.

Horizon and Lincoln Lab. Nos.

0 to 31 inches. Grayish brown (10YR 5/2 dry) to dark brown (10YR 3/2.5 moist and crushed) fine sandy 10887 loam; weak to moderate medium crumb structure breaking to weak to moderate fine crumbs; soft when dry,

very friable when moist; noncalcareous; lower boundary clear and smooth.

A12 32 to 7 inches. Grayish brown (10YR 5/2 dry) to dark brown (10YR 3/2.5 moist and crushed) fine sandy losm; weak coarse subangular blocky structure breaking to moderate medium crumbs; soft when dry, very friable 10888

when moist; noncalcareous; lower boundary clear and smooth.

A2B fine sandy loam; weak medium subangular blocky structure; slightly hard when dry, very friable when moist; 7 to 8½ inches. Gray to light brownish gray (10YR 6/1.5 dry) to dark brown (10YR 3.5/3 moist and crushed) 10889

	SOIL TYPE Platner LOCATION Morgan County, Colorado	
	SOIL TYPE Platner LOCATION Morgan County, Colorado	
	SOIL NOS. 559Colo-14-10 LAB. NOS. 10898-10907	
<b>-</b> -(1-	1818   PARTICLE SIZE DISTRIBUTION (in num. (per cent))   3A1	
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Soil Type: Flatner fine sandy loss Soil Nos.: 8590olo-44-10 Field classification: Chestnut.

Ideation: 800 feet south, 80 feet east of northwest corner, Sec. 17, T5N, R55W, Morgan County, Colorado.

Photo: YE-6F-53.

Climate: Continental, average annual precipitation 13-15 inches. Elevation 4,550 feet. Prost-free season 146 days.

Mean annual temperature 48° F.

Vegetation: Grama, threeswn, buffalograss, few annual weeds. Parent material: Tertiary outwash.

Physiographic position: Upland.

Relief: Gently sloping, 1-2 percent slope.

Aspect: Southeast.

Brainage: External drainage slow, internal drainage moderate to slow. Moisture: Moist to 25 inches at time of sampling.

Water table: Mone observed.

Stoniness: Few small outwash gravels All through Cos.

Salt or alkali: None observed other than calcium carbonate.

Erosion: Slight wind and water.
Described by: Clayton F. Spears, May 7, 1959.
Remarks: Many medium and small krotovinas of insects and worms from R21 through the Coa.

Horizon and **I**4ncoln Lab. No.

A11

ROOK.

10902

0 to 42 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2.5 moist and crushed)

lower boundary clear and smooth.

 $4\frac{1}{2}$  to  $8\frac{1}{2}$  inches. Grayish brown (10YR 5/2 dry) to dark brown (10YR 3/3 moist and crushed) sandy loam; very weak coarse subangular blocky structure breaking to weak medium crumbs; soft when dry, very friable WJ5 10899 when moist; noncalcareous; lower boundary clear and smooth.

8½ to 11 inches. Light brownish gray (10YR 6/2 dry) to dark grayish brown (10YR 4/2.5 moist, 10YR 4/2 grushed) sandy loam; weak medium subangular blocky structure; slightly hard when dry, friable when A2B 10900 moist; very thin patchy clay skins on vertical faces of soil aggregates; the aggregates in this horison have gray coatings on their surface of gray (10YR 6/1 dry) bleached send and silt particles which are most evident when dry; noncalcareous; lower boundary abrupt and smooth.

P21t 11 to 14 inches. Dark grayish brown (10YR 4/2.5 dry) to very dark grayish brown (10YR 3/2 moist and 10901 crushed) clay loam; strong fine prismatic structure breaking to strong fine subangular blocks; hard when dry, firm when moist; moderate continuous clay skins on both vertical and horizontal faces of soil aggregates; some graying on tops of prisms; noncalcareous; lower boundary clear and smooth.

14 to 19 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3/3 moist, 10YR 3.5/3 crushed) clay loam; strong fine prismatic structure breaking to strong fine subangular blocks; very hard when dry, firm when moist; moderate continuous clay skins on both vertical and horizontal faces of soil aggregates; noncelcareous; lower boundary clear and wavy; this horison shows some streaks of brown (10YR 5/3 dry).

19 to 21 inches. Brown (10YR 5/3 dry) to dark brown (10YR 4/2.5 moist) (10YR 4/2 crushed) light clay loss; moderate medium prismatic structure breaking to moderate medium subangular blocks; hard when dry, B3 10903 Irlable when moist: thin nearly continuous clay skins on both wortical and horizontal faces of soil

> aggregates; very slightly calcareous; lower boundary clear and wavy; this horizon shows streaks of dark STAVish brown (10YR 4/2 dry) and some patches of lime.

13ca 10904 21 to 25 inches. Fale brown (10YR 6.5/3 dry) to brown (10YR 5/3 moist, 10YR 4.5/3 crushed) very fine sandy loam; weak coarse prismatic structure breaking to weak coarse subangular blocks; slightly hard when dry, friable when moist; very strongly calcareous; visible lime in forms of streaks and medium soft concretions; lower boundary clear and smooth; this horizon shows some streaks of very pale brown (10MR 8/3 dry).

Coa 25 to 34 inches. Very pale brown (10YR 8/3 dry) to pale brown (10YR 6/3 moist, 10YR 5.5/3 crushed) gravelly sandy loam

SOIL NOS. 0570010-7-3 LAB. NOS. 7579-7584

	!	lBla.		H. BARTI	CLF SIX	E DISTRIB	OTION (in	mm.) (pr	er cam)	3A1.		
DEPTH INCHES	новіхон	VEPY COAPSI SAND	CCAPSE SAND	MEDIUM SAND	FIME	VERY FINE SAND	SILT	CLAY	***	_	2A2 > 2	TEXTURA CLASS
		7.1	1 0.5	9 5/0.25	0.75-0.10	6,10,0,65	0.05-0.002	< 0.002	0.2-0.02	002-0002	(<19mm	)
1½-0 0-4½ 4½-10 10-14 14-21 21-28+	Al2 Birl Bir2	17.6a 15.7a	17.6a 13.64 11.3a	5.8a 6.7a 5.1a	8.8a 9.3a 16.7a 12.4a 19.6a	6.2a 13.2a 11.7a	20.0 21.7 27.9 38.5 11.7	4.3 5.3	20.4 36.5	14.0 21.3	6 40 36 25 16 69	cosl cosl cosl cosl lcos
	eH .81	la		OBLA	TTER	Free Iron	aggredina iqtangragaziya	CoCO3	draeskerskoodde <i>e</i>	MO151	URE TE	NSIONS 4B2

Soil Type: Ptarmigan gravelly sandy loam Location: Niwot Ridge, approximately 300 yards south by west (approximately 260° bearing) from the first permanent rock monument east of the Tundra Laboratory, Boulder County, Colorado

Date of Sampling: July 2, 1957

Collectors: W. Osburn, A. J. Cline Described by: A. J. Cline

Physiographic Position: Alpine ridge

Tonography: Convex ridge side approximately 8 percent gradient.

Drainage: Well drained

Vegetation: Thick Kobresia bellardi sod, some Carex illinoides, and Geum rossi.

Use: National Forest land, (Alpine Experimental Fields)

Soil Nos.: S-57-Colo-7-3

Lincoln Laboratory Nos.: 7579-7584

12-0 inches Organic horizon consisting of undecomposed and partially decomposed Ao, Aoo Kobresia roots and plant remains. 7579

0-42 inches Very dark gray (10YR 3/1 dry) to black (10YR 2/1 moist) gravelly All sandy loam; soft when dry, very friable when moist; moderate coarse crumb structure; noncalcareous, approximate pH 6.0; lower boundary clear and wavy; the temperature of this horizon on the day of LSL 7580 sampling was approximately 42° F.

12-10inches/ery dark grayish brown (10YR 3/2 dry) to very dark brown (10YR 2/2 moist) gravelly sandy loam; slightly hard when dry, very friable A₁₂ when moist; moderate fine subsidular blocky structure, breaking to LSL weak to moderate medium granules; noncalcareous, approximate pH 7581. 6.0; lower boundary gradual and smooth. The temperature of this horizon on the date of sampling was approximately 38° F.

10-14inchesLight yellowish brown (10YR 6/4 dry) to dark yellowish brown (10YR 4/4 moist) gravelly loam; slightly hard when dry, very friable when B_{irl} moist; weak to moderate fine subangular blocky structure; noncalcareous, approximate pH 4.6; there are a few indistinct thin patchy LSL 7582 clay skins on some of the soil aggregates; the temperature on the date of sampling was approximately 32° F. Approximately 30% of this horizon is gravel; lower boundary diffuse and smooth. The gravel and rock fragments are coated on their underside with a very dark brown (10YR 2/2 coating.)

14-2linches Light yellowish brown or very pale brown (10YR 6.5/h dry) to dark B_{ir2} yellowish brown or yellowish brown (1978 4.5/4 moist) stony loam; slightly hard when dry, very friable when moist; weak to moderate LSI medium subangular blocky structure, breaking to weak to moderate 7583 fine subangular blocks; noncalcareous, approximate pH 4.4; there are a few indistinct thin patchy clay skins on some of the soil aggregates; approximately 60% of this horizon is stone; the underside of the stone fragments is coated with a dark brown (10YR 3/3 coating) the temperature of the horizon on the date of sampling was approximately 30° F; lower boundary diffuse and smooth.

21-28 / Pale brown (101H 6/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 dry) to brown (101H 5/3 d Pale brown (10YR 6/3 dry) to brown (10YR 4/3 moist). This horizon crushed in some places between the fingers and other places are LSI relatively indurated. The temperature of this horizon on the date 7584 of sampling is approximately 280 F.

	SOIL	TYPE_	Ptarmigan loam	L(	CATION.	Boulder	County, C	oloredo	*****
	S	SOIL NOS.	S57Colo-	7-4	LAB.	NOS.	7585-759	0	kva naste -
	***************************************		1Bla PA		DISTRIBUTION			or 101 (10 or 100 or 100 or 100 or 100 or 100 or 100 or 100 or 100 or 100 or 100 or 100 or 100 or 100 or 100 o	<u>`</u>
	DEPTH INCHES	HORIZON CO.	ERY ARSE CGARSE MED SAND SAS	IUM FINE ID SAND	VERY FINE SAND SILT	CLAY		2A2 TEXTU	RAL .
	<u>.</u>	•	2.1   1.ns   hs.n	25 A 26 A 1A	A 10 0 0 0 10 0 E 0 0	na   - a ma   a	7 6 64 6 66 6	/ Is	-
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Soil Type: Ptarmigan loam

Location: Niwot Ridge, approximately 600 yards northwest (bearing 3400) from the Alpine Van. Locally the area is known as the northeast shoulder of the Van Knoll, Boulder County, Colorado.

Date of sampling: July 3, 1957

Collectors: W. Osburn, A. J. Cline Described by: A. J. Cline

Fhysiographic Position: Alpine Ridge

Topography: Convex shoulder of an Alpine Ridge having approximately 8 percent gradient.

Drainage: Well drained

Vegetation: Principally Kobresia bellardi

Use: National Forest land (Alpine Experimental Fields)

2-0 inches Organic horizon of undecomposed and partially decomposed Kobresia A_o, A_{oo} roots and plant remains. LSL 7585

O-4 inches Very dark gray (10YR 3/1 dry) to black (10YR 2/1 moist) moderate coarse crumb structure; noncalcareous; on the date of sampling the temperature of this horizon was approximately 40° F; lower boundary gradual and wavy.

4-10 inches Brown (10YR 5/3 dry) to dark brown (10YR 3.5/3 moist) loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure, breaking to moderate medium granules; noncal-careous, approximate pH 4.6; there are a few indistinct thin patchy clay skins on a few of the soil aggregates; in the date of sampling the temperature of this horizon was approximately 36° F; lower boundary gradual and smooth.

10-15 inchestight yellowish brown (10YR 6/4 dry) to dark yellowish brown (10YR Bir] 4/4 moist) loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure, breaking to moderate very LSL fine subangular blocks; noncalcareous, approximate pH 4.6; there are a few indistinct patchy clay skins on a few of the aggregate faces; on the date of sampling the temperature of this horizon was approximately 30° F; lower boundary gradual and smooth. There are a few rock and gravel fragments in this horizon and their undersides are coated with a dark brown (10YR 3/3 coating).

15-26 inchesight yellowish brown (10YR 6/h dry) to dark yellowish brown (10YR Bir2 h/h moist) stony sandy loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure; noncalcareous, approximate pH h.h; on the date of sampling the temperature of this herizon was approximately 28° F; approximately 30% of the horizon is rock; the underside of the rock fragments is coated with dark brown (10YR 3/3 material); lower boundary gradual and smooth.

26-32 / Light yellowish brown (2.57 6/3 dry) to light olive brown (2.57 C inches 5/3 moist) stony loamy sand or sand; slightly hard when dry, very LSL friable when moist; massive; noncalcareous; this horizon is mainly decomposed Monzonite; the temperature on the date of sampling was approximately 28° F.

SOIL	_ TYP!	Pta loa			L	OCAT	ION	Boulde	r Cour	ity, Co	lorad	<u> </u>		
	soil nos	SOIL NOS. S57Colo-7-5 LAS. NOS. 7591-7596												
1Ha PARTICLE SIZE DISTRIBUTION (in														
DEPT	H HORIZON	VERY COARSE SAND	SAND	SAND	SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURAL CLASS		
2-0	A ₀ A ₀₀	2.1	1	1			0.05-0.002		1	1	] -			
1 Q-5	Al .	11.4a	111.2a	5.Ja.	9.5a	6.0a	33.3	117.8	127.5	:21.8	III	11 i		
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Soil Type: Ptarmigan loam

Location: About mile northeast (bearing 450) from the Van Camp, Niwot

Ridge, Boulder County, Colorado

Date of Sampling: July 3, 1957

Collectors: W. Osburn, A. J. Cline Described by: A. J. Cline

Physiographic Position: Alpine Ridge

Topography: South facing shoulder of Alpine Ridge having a gradient of approximately 5 percent.

Drainage: Well drained

Vegetation: Principally Kobresia bellardi

Use: National Forest Lands. (Alpine Experimental Field)

Soil Nos.: S-57-Colo-7-5 Iincoln laboratory Nos.: 7591-7596

2-0 inches Organic horizon made up of undecomposed and partly decomposed Kobresia roots and plant remains; the temperature of this horizon Ao, Aoo on the date of sampling was approximately 620 F. LSL 7591

0-5 inches Very dark gray (10YR 3/1 dry) to black (10YR 2/1 moist) loam; soft when dry, very friable when moist; moderate coarse crumb structure; **A**1 noncalcareous, approximate pH 5.8; the temperature of this horizon on the date of sampling was approximately 58° F; lower boundary clear LSL 7592 and wavy.

5_8 inches Dark grayish brown (10YR 4/2 dry) to very dark grayish brown (10YR 3/2 moist) sandy clay loam; slightly hard when dry, very friable when ÁΒ moist; weak to moderate medium subangular blocky structure, breaking LSL to moderate very fine subangular blocks; noncalcareous, approximate 7593 pH 4.8; there are a few indistinct clay skins on the surfaces of a few of the soil aggregates; the temperature of this horizon on the date of sampling was approximately 50° F; lower boundary clear and wavy.

8-14 inches Light yellowish brown (10YR 6/4 dry) to dark yellowish brown (10TR Birl 4/4 moist) gravelly sandy clay loam; slightly hard when dry, very friable when moist; the upper one-inch of this horizon has a LSL moderate to strong fine platy structure, whereas the rest of this 7594 horizon is weak medium subangular blocky breaking to moderate very fine subengular blocks; noncalcareous, approximate pH h.h; there are a few indistinct clay skins on the surfaces of some of the soil aggregates: on the date of sampling the temperature of this horizon was approximately 42° F; lower boundary gradual and smooth. Approximstely 20% of this horizon is gravel.

14-21 inches Light yellowish brown (10YR 6/4 dry) to dark yellowish brown (10YR Bir₂ 4/4 moist) gravelly sandy clay loam; approximately 40% of this horizon is gravel and stone; the underside of the stone and gravel fragments are coated with a very dark brown (10YR 2/2 coating); LSL on the date of sampling the temperature of this horizon was approx-7595 imately 38° F; lower boundary gradual and wavy.

21 / inches Pale brown (10YR 6.5/3 dry) to brown (10YR 5/3 moist) stony sandy loam; slightly hard when dry, very friable when moist; massive; noncalcareous, approximate pH 5.8; approximately 70% of this horizon is stone; the underside of the stone fragments is coated with very LSL 7596 dark brown (10YR 2/2 materials); on the date of sampling the temperature of this horizon was approximately 34° F.

SOIL	SURV	ΕY	LABORAT	ORY	Lincoln,	Nebr.	Lecember	1958
SOIL	TYPE.	Pta:		LOC	ATION	Boulder	County, Co	oloredo
SOI	l nos.		857Colo=7#6	5	LAB.	NOS.	7597-760	<b>7.</b>

		1Bla	·****	PARTI	CLE-SI7	E DISTRIE	UTION (in			2 V J	***************************************	
DEPTH INCHES	HORIZON		COARSE SAND			VERY FINE SAND	SILT	CLAY		) <u></u>	2A2 > 2	TEXTUR/ CLASS
		2.1	1-0.5	0.5-0,25	Q. 25-Q. 10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	002-0 <b>00</b> 2	(<19mm	5
0-4 <del>}</del>	Al	2.6a	10.5a	8.5a	12.9a	6.4a	44.5			25.3	2	ì
43-7	AB				10.6a		34.0	12.6	25.2	20.9	14	cosl
7-18	Bir				11.3a		37.5	4.4	30.0		27	cosl
18-24	BC				12.la		30.4	3.0			40	cosl
24-30+	C	23.4a	25.9a	10.8a	11.6a	6.7a	1.8.9	2.7	21.9	9.2	45	lcos
-	PH 80		ORGA	INIC MA	asamaan TTER	Free	***************************************	tetespleserenderi	900 madadani sa v a 920	MOIST	URE TE	NSiONS
			6Ala			Iron						4 <b>B</b> 2
	1:5	1:10	ORGANIC CARBON	NITRO-	C/H	Fe ₂ 0 ₃ ဂ	:	CoCO3 equiv- olent		1/10 ATMOS.	1/3 ATMOS.	15 ATMOS
1:1			*			6¢1a	•••••			* .	3	
5.4 5.5 5.7 5.3	5.7		3.04 1.85	1.166 0.233 0.145 0.044	13 13	1.4 2.3 2.0 1.4 1.6	·					38.1 8.8 5.2 3.3 2.5
5ALB CATION EXCHANGE TAPACITY NHILAC	6NZb C•	*****	7ABLE ( 6Hla H	CATIONS 6P2s.	5Bla 692a K	BASE SAT. % NH4Ac EXCH.	5C3 Base Sat. %	Sun Beses 5Bla	Sum Cations 5A3a			**************************************
		mille qui v	alema par	100g. seli		501	Cations	_me/	100g >	.ad		
46.9	30.7		34.8			81	52	38.1	72.9	5.0		
21.6	10.3	2.5	16.9	<0.1	0.2	60	43	13.0	29.9	4.1		
15.0	4.2		16.8		0.1	35	24	5.2	22.0			
8.9 6.7	1.5 0.6	0.2	10.6 8.6	<b>9</b> .1	<b>0.2</b>	19 16	14	1.7	12.3 9.7			
<b>a.</b>	řev f	lakes (	of mic	ı. Al	so, fe	r black	minera.	Ls.				

Soil Type: Ptarmigan loam

Location: Niwot Ridge, approximately 3/4 mile north of the Alpine Van Camp,

Boulder County, Colorado

Date of Sampling: August 12, 1957

Collectors: W. Osburn, A. J. Cline Described by: A. J. Cline

Physiographic Position: Alpine Ridge

Topography: Moderately sloping ridge side facing northwest and having a gradient of about 8 to 9 percent.

Drainage: Well drained

Vegetation: Chiefly Kobresia bellardi

Use: National Forest lands. (Alpine Experimental Fields)

Soil Nos.: S-57-Colo-7-6 Lincoln Laboratory Nos.: 7597-7601

1-0 inch

A_o, A_{oo}

This is an organic horizon made up of undecomposed and partially

decomposed Kobresia roots and plant remains. On the date of sampling
the temperature of this horizon was approximately 72° F. Not
sampled.

O-liminches
Very dark grav (10YR 3/1 dry) to black (10YR 2/1 moist) loam; soft

When dry, very friable when moist; strong, coarse crumbs structure;

noncalcareous; on the date of sampling the temperature of this

horizon was approximately 60° F; lower boundary clear and smooth.

Dark grayish brown (10TR 1/2 dry) to very dark grayish brown (10TR 3/2 moist) stony loam; soft when dry, very friable when moist; strong coarse crumb structure; noncalcareous, approximate pH 5.0; approximately 40% of this horizon is stone fragments; the lower sides of the stones are coated with a dark brown (10TR 3/2 and 2/2 substance); on the date of sampling the temperature of this horizon was approximately 54°; lower boundary clear and wavy.

7-18 inches Yellowish brown (10YR 5/4 dry) to dark yellowish brown (10YR 3/4 Bir moist) stony loam; slightly hard when dry, very friable when moist; weak medium subangular blocky structure, breaking to moderate medium granules; noncalcareous, approximate pH 4.8; there are a few thin patchy clay skins on the faces of some of the soil aggregates; approximately 50% of this horizon is stone fragments; the underside of the stone is coated with dark brown (10YR 3/3 material); on the date of sampling the temperature of this horizon was 52°F at 11" and 50°F at 15"; lower boundary gradual and irregular.

18-2h inches Pale brown (10YR 6/3 dry) to brown or dark brown (10YR 4/3 moist)

BC stony sandy loam; slightly hard when dry, very friable when moist;

weak, fine subangular blocky structure, breaking to weak fine gran
ules; noncalcareous, approximate pH 5.h; approximately 60% of this

7600 horizon is stone; the underside of the rock fragments is boated with

dark brown (10YR 3/3 materials); on the date of sampling the tem
persture of this horizon at 23" was approximately 50°F; lower boundary

gradual and wavy.

24-30 / Pale brown (10YR 6/3 dry) to brown or dark brown (10YR 4/3 moist)

c inches stony loamy sand; slightly hard when dry, very friable when moist;
massive to single grained; noncalcareous, approximate pH 5.8;

LSL approximately 80% of this horizon is stone; the temperature of this horizon on the date of sampling was 42° F at 30°.

SOIL TYPE Ptarmigan LOCATION Grand County, Colorado gravelly sandy loam

SOIL NOS. LAB. NOS. 2800-2805

			Na	PARTI	CLE SIZ	E DISTRIB	SUTION Lin	тти, (р.	er cont)	يهو	·	į
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SANO	VERY FINS SAND	SILT	CLAY			> 2	TEXTUR CLASS
		2-1	1-0.5	0.5-0.25	C. 25-0. 10	0.10-0.05	0.05-0.002		0.2-0.02	0.02-0.002	! ! • • • • • • •	
0-5	All	8.9	14.3	7.7		7.6	33.6	14.4	30.2	· ·		<b>=1/1</b>
5-21	V15	16.5	12.1	7.3		•	25.5	11.1	34.5	12.6		cosl
21-40	B₽	10.1		6.9			34.7	3.1			•	fal
40-55	C1 Cf	11.1 6.8		9.6		_		9.3 15.8				cosl fsl
55-72 72-82	Cgf	14.8						7.0		15.4 11.5		cosl
:E4 o4 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		<b></b>		<b></b>		_				18.,444 <b>9</b> 44,9444		
	ρH		,-,	ANIC MA	TTER	6CLa				MC15	TURE TO	ENSIONS
8Cla	1:5	1:10	6ALA ORGANIC CARBON	NITRO-	C/N	Free Iron		equiv-	GYPSUM ma./100g. SCIL	1/10 ATMOS.	1/3 ATMOS.	15 ATMOS
1:1			*	•		Fe ₂ O ₂	,	*		76	•	%
5.1			11.10		14	1.1	<del></del>					
4.6			2.17	0.165	13	1.6	ŀ					<b>!</b>
4.8	İ			0.032	12	1.1						:
4.8				0.007		1.2						ļ
4.8			0.08			1.7 1.2						İ
<b>a</b> ,			<b></b>									
5Ala	40044+++===============================	EXTRAC	TABLE	CATIONS	5B).a	5C1	Base	Sum	Sum	Ca/Mg	95,3481.1549848.	>+++++++++++++++++++++++++++++++++++++
CATION		602ъ	6Hla	6P2a		Base Sat	Sat. %	Cat.	Cat.	, -		MOISTUR
XCHANGE APACITY	c.	Ma	11	No	K	NHLAC	om Summ					SATU-
НµАс			alents per			Exch.	Cations					RATION
22 %	10 4	4.1			0.7	72	503 46	5Ela 24.2		813		
33.6 <b>20.2</b>	19.4 2.2	0.4					12	2.8		74 (		
10.3	0.2	0.3					6	0.7	- 1		i	
13.9	4.1	1.2	;				41	5.8	14.0	3.4		
15.3	8.0	2.6	5.6	0.2	0.4	73	67	11.2	16.8	3.1		
. 8	8.	a	8.	a	a							
<b>T</b>	rricie			,					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			

Soil Type: Ptarmigan gravelly sandy loam Location: SW 1/4 of Sec. 26, T2S, R76W, Grand County, Colorado. Alpine turf, East St. Louis Alpine Area. Hysiographic Position: Upland.

Topography: Convex Alpine ridge crest.

Drainage: Well drained above the permafrost layers.

Vegetation: Sedges, mainly Kabresia. Use: National Forest Service lands.

Collected and Described by: John L. Retzer, September 6, 1952.

Horizon and Lincoln Lab. No.

0 to 5 inches. Black (10YR 2/1 dry to 10YR 2/0 moist) gravelly sandy loam; soft when dry, very friable 2800 when moist; moderate to strong fine granular structure; stongly acid, approximate pH 5.2; lower boundary

clear and smooth.

5 to 21 inches. Very dark gray (10YR 3/1 dry) to very dark brown (10YR 2/2 moist) gravelly sandy loam; A12 slightly hard when dry, very friable when moist; moderate to strong granular structure; very strongly acid, approximate pH 4.6; lower boundary clear and wavy. 2801

R2 21 to 40 inches. Light yellowish brown (10YR 6/4 dry) to yellowish brown (10YR 5/4 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; moderate to strong fine and very fine subangular blocky structure; very strongly acid, approximate pH 5.0; lower boundary clear and wavy. 2802

40 to 55 inches. Light yellowish brown (2.5Y 6/3 dry) to olive brown (2.5Y 4/4 moist) gravelly sandy Сl 2803 loam; slightly hard when dry, very friable when moist; very weak coarse subangular blocky structure or massive; very strongly acid, approximate pH 4.6; horizon contains many medium-sized distinct 5Y 5/6 and lower 5/4 mottles; lower boundary gradual and smooth. This horizon is believed to be the top of the frost zone. Rocks are well weathered and soft.

55 to 72 inches. Light yellowish brown (2.5Y 6/3 dry) to light clive brown (2.5Y 5/4 moist) gravelly sandy loam; extremely hard when frozen and in place but slightly hard when dry and very friable when moist if unfrozen; massive; very strongly acid, approximate pH 4.5; this horizon contains many large distinct 5Y 5/6 and 10YR 5/8 mottles. Lower boundary diffuse and smooth. It is thought that this horizon is frozen most of the year and may be a perpetual zone of permafrost in some areas. 2804

72 to 82 inches. Pale olive (5Y 6/3 dry) to olive (5Y 4/3 moist) gravelly sandy loam; extremely hard when frozen but slightly hard when dry and very friable when moist if unfrozen; massive; very strongly acid, approximate pH 4.5. It is thought that this represents a permanently frozen horizon. SOIL SURVEY LABORATORY Lincoln, Nebr. 3/17/58 SOIL TYPE Ptarvigan LOCATION Grand County, Colorado loan \$550010-25-1 LAB. NOS. 2868-2872

SOIL NOS.

DEPTH INCHES	HORIZON	1Bla VERY	COARSE	PARTI	CLE SIZ	E DISTRIE VERY FINE	UTION (in			3A1	2A2	TEXTURAL
INCHES	HON12UN	SANO 2-1	\$AND 1.0.5	SAND	SAND 0. 25-0, 10	SAND	SILT 0.05/0,002	CLAY	6, 2-3,62	0.02-0.00 <b>2</b>	> 2 <19mm	CLASS
1 <del>1</del> -6		15.4 36.2 26.1	6.4 9.2 11.9 11.5 8.2	2.9 4.0 3.6 4.3 0.7	5.4 6.6 5.1 8.1 0.8	6.0 7.1 6.3 9.9 1.0	47.8	18.2 19.0 11.9	29.8 27.9 20.3 25.9	27.2 21.8 14.1 16.5	7 19 29 18	l cosl cosl lcos
	pΗ		ORG	NIC MA	TTER	Free	***********	*****:*444.444444	************	AIO151	URE TE	ENSIONS
8Cla	8 <b>Cla</b> 1:5	F:30	6Ala ORGANIC CARBON	6Bla NITRO- GEN	C/N	Iron Feg03				1/10 ATMOS.	1/3 ATMO5.	4B2 15 ATMOS.
1:1			*	- %		6CLa		***		*	*	%
5.6 5.4 5.5	6.0 5.8			.978 .300 .048	13 11 12	1.6 2.0 3.1 1.3						39.7 29.4 10.7 7.7 3.9

Soil Type: Ptarmigan loam Soil Nos.: S55Colo-25-1

Iocation: Near the southwest corner of Sec. 2, T3S; R77W; Grand County, Colorado.

Physiographic Position: Upland, Alpine crest of mountain.

Topography: A moderately sloping to undulating plain. Sample was taken on a convex sloping area of approximately

8 percent, facing south. Elevation approximately 12,435 feet.

Drainage: Well drained.

Vegetation: Thick ground cover of Alpine grasses and sedges.

Use: Grazing land.

Collected and Described by: James Allen, A. Aandahl, J. Retzer, E. M. Payne, A. J. Cline, August 10, 1955.

Horizon an Lincoln Lab. No.

All 0 to  $1\frac{1}{2}$  inches. Very dark gray (10YR 3/1 moist or dry) to black (10YR 2/1 moist) loam; soft when dry, very friable when moist; moderate to strong fine and medium crumb structure; strongly acid; the horizon is thickly matted with grass and sedge roots; lower boundary clear and smooth.

Al2 log to 6 inches. Very dark gray (10YR 3/1 dry) to black or very dark brown (10YR 2/1.5 moist) loam; soft when dry very friable when moist; moderate to strong, medium and coarse crumb and granular structure; strongly acid; the horizon is thickly matted with grass roots; lower boundary clear and wavy.

Bl 6 to 10 inches. Yellowish brown (10YR 5.5/4 dry) to dark yellowish brown (10YR 4.5/4 moist) heavy gravelly loam; soft when dry, very friable when moist; moderate to strong fine and very fine subangular blocky structure breaking to fine and medium granules; strongly acid; the horizon has a very few very thin patchy tonhautchen on both horizontal and vertical faces; lower boundary clear and wavy.

B2 10 to 23 inches. Light yellowish brown and yellowish brown (10YR 6/4 and 10YR 5/4 dry) to yellowish 2871 brown (10YR 5/4 moist) gravelly sandy clay loam; slightly hard when dry, friable when moist; moderate to strong very fine subangular blocky structure; very strongly acid; the horizon has a few thin patchy tonhautchen on both horizontal and vertical faces of peds; lower boundary gradual and smooth.

C 23 to 35 inches plus. Fractured and weakly weathered gneiss and schist rocks. 2872

SOIL TYPE Baro LOCATION KIT CARSON CO., CCLO.

silt loam

SOIL NOS. S-54-Colo-32-3 LAB. NOS. 2570-2578

; !	<u> </u>	181	a	PARTI	CLE SIZ	E DISTRIB	UTION (in	тт.) (р	er cont)	3A1		<del>(=1011+1+++1++1+1+1+1+1+1+1+1+1+1+1+1+1+1</del>
DEPTH INCHES	HORIZON	VERY COARSE SAND 2-1	COARSE SAND 1-0,5	MEDIUM SAND 0,5-0.25	FINE SAND 0.25-0,10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.092	0.2-0.02	<b>Q02-Q0</b> 02	2A2 > ²	TEXTURAL CLASS
0-3 <del>1</del>	Ap	0.2	0.5	0.2	0.6	21.4	55.6	21.5	55.8	21.6	_	sil
3½-8	м3	0.1	0.5	0.3	0.6	20.5	54.6	23.4	58.9	16.6	-	sil
	B21	_	0.2	0.1	0.3	12.4	47.7	39.3	45.6	14.7	l —	sicl
	B2lb	-	0.2	0.1	0.3	11.5	47.7	40.2	39.8	19.6	-	sic
	В22Ъ	-	0.1		0.4	14.3	49.0	36.2	43.1	20.5	-	sicl
22-25	B3cab	-	0.1	0.2	9.0	19.9	49.7	29.3	50.2	19.9	-	cl
25-27	B3cab	0.1	0.3	0.2	1.1	22.0	52.1	24.2	54.2	20.6	-	sil
	B3cab	~	. –	0.1	0.6	23.1	54.3	21.9	56.1	21.7	-	sil
35-46	iC	_	0.1	0.1	0.5	24.5	57.9	16.9	60.7	22.0	-	sil
<del>                                    </del>	pH	1 18 combs 2 12 18 18 17	ORG	VNIC MA	TTER	8A2	ELECTRI-	6Kla	i i 100011100111011	MOIST	TURE TE	NSIONS
<b>8¢1b</b> _	8cla	8Cla	6Ala	6Bla		EST'S SALT	CONDUC-		GYPSUM			4B2
- RATED PASTE	1:5	1:10	ORGANIC CARBON	NITRO- GEN	C/N	(BUREAU CUP)	TIVITY EC = 10 ³ MILLIMHOS PER CM #25 • C.	CoCO3 equive sient	me./100g. SOIL		1/3 ATMOS.	15 ATMOS.
						*****					7	
6.8	7.4	7.6	1.59		11	-		-	İ			9.5
6.4	7.2	7.3	1.02		10	-		-	<u> </u>	Ī		10,0
6.4	7.5	7.6	0.86		8	-		<b>!</b> -				17.6
7.5	8.6	8.8	0.93		9			-	ļ	•	İ	17.5
7.8	9.1	9.2	0.64		10	-		4		•	]	16.2 14.2
7.9	9.2	9.3	0.46		9	-		6	İ			12.7
8.1	9.4	9.5	0.38	.042	9	_		п	ĺ			12.4
8.2	9.4	9.5	0.27	1.031	9	_	1	l ## ~	<b>.</b>	1	Į	1~**

Soil Type: Rago silt loam Soil Nos.: 854Colo-32-3

Rosardon: 200 feet west, 75 feet north of southeast corner Sec. 34, Thos, R44W, Kit Carson County, Colorado. Rysiographic Position. Upland.

Topography: Mearly level to very gently concave slope of approximately 1 percent.

Drainage: Moderately well drained.

Vegetation: Wheat stubble and a thin growth of weeds.

Use: Cultivated field used for wheat during current season.
Sampled by: James Allen, Dale Romine, E. M. Payne, and A. J. Cline, September 2, 1954.

Described by: E. M. Payne.

Horizon and Lincoln Lab. No.

A3 2571

RO1 2572

0 to 32 inches. Pale brown (10YR 6/3 dry) to dark grayish brown (10YR 4/2 moist) silt loam; soft when **А**р 2570 dry, very friable when moist; weak very fine granular structure; noncalcareous; lower boundary clear

Brown (10YR 5/3 dry) to dark brown (10YR 3.3 moist); silt loam; slightly hard when dry, friable when moist; very weak coarse subangular blocky structure; noncalcareous; moderate numbers of medium sizeddistinct loyR 5/6 mottles; the structure in this horizon may be influenced by tillage; where observed in the cut of the pit, this horizon had an indefinite and irregular zone near its bese that had characteristics of an E (or A2) horizon. The color graded in these areas to 10YR 7/3 to 6/3 dry but when moist was about the same color as is described above. It had a vesicular appearance and was slightly lighter in texture. In other places no definite zone of lighter color or vesicular nature could be seen but aggregates frequently were flecked with spots of low 8/2. Lower boundary is abrupt and wavy.

8 to 12 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) heavy silty clay loss; hard when dry. firm when woist; moderate to strong fine prismatic, breaking to moderate to

strong fine angular blocky; noncalcareous; the horizon had a few thin patchy Tonhautchen; lower boundary is clear and smooth.

B21b 12½ to 19 inches. Gray (10YR 5/1 dry) to very dark gray (10YR 3/1.5 moist) light silty clay; very hard when dry, firm when moist; moderate medium prismatic, breaking to strong medium angular blocky; noncalcareous; the horizon has thick prominent Tonhautchen; the structural cracks between the peds 2573 in this horizon are filled with lighter colored materials washed from the horizon above; lower boundary abrupt and smooth.

19 to 22 inches. Grayish brown (10YR 5/2 dry) to dark grayish brown (10YR 4/2 moist) silty clay loam; ROOM 2574 hard when dry, friable when moist; weak coarse prismatic breaking to moderate coarse angular blocky; calcareous; the horizon has a few small calcium carbonate concretions and mycelia; Tonhautchen are moderately prominent; common numbers of medium-sized faint 10YR 4/4 mottles; lower boundary gradual and smooth.

BReab 22 to 25 inches. Fale brown (10YR 6/3 dry) to brown (10YR 5/2.5 moist) heavy silt loam; hard when dry, friable when moist; weak coarse prismatic, breaking to moderate coarse angular blocky; calcareous; 2575 the horizon contains moderate amounts of accumulated lime both as lime flour and in concretions; this horizon has been thoroughly reworked by worms and dark channels containing material of the horizons above occur prominently in it. There are some channel fillings between the peds of dark material apparently washed down from the preceding horizons. Lower boundary is gradual and smooth.

25 to 27 inches. Light gray (10YR 7/2 dry) to light brownish gray(10YR 6/2.5 moist) silt loam; slightly hard when dry, very friable when moist; weak coarse prismatic, breaking to weak coarse subangular blocky; calcareous; this horizon contains some accumulated lime but less than the horizon above or the B3cab 2576 horizon below; this horizon has been thoroughly reworked by worms, and worm casts and channels filled with darker materials from the horizons above are plentiful; some of the aggregate faces are coated with darker material apparently washed from the horizons above. Lower boundary is gradual and smooth.

27 to 35 inches. Light gray (10YR 7/2 dry) to pale brown (10YR 6/3 moist) silt loam; hard when dry, 2577 friable when moist; a very weak coarse subangular blocky structure; calcareous; the horizon contains moderate amounts of accumulated lime chiefly as lime flour but with some calcium carbonate concretions. The amount of lime is greater than in the horizon above or in the horizon below; there are a few worm casts and worm channel fillings in the horizon; lower boundary gradual and smooth.

35 to 46 inches. Very pale brown (10YR 8/3 dry) to pale brown (10YR 6/3 moist) coarse silt loam or very fine sandy loam; slightly hard when dry, very friable when moist; massive; calcareous; the horizon contains moderate amounts of accumulated calcium carbonate as lime flour and as concretions and mycelia, 2578 but there is less than in the horizon above.

	SOIL	SUR	VEY	LAB	ORA	TORY	MAN	DAN, NOF	TH DAK	OTA	9- <b>7</b> -55				
	SOIL TYPE Rago LOCATION KIT CARSON CO., OULO silt loam														
	80	OIL NOS	3 <b>.</b> .	S-54-0	≿10 <b>-3</b> 2	2-4	<u></u>	LAB. I	NOS.	257	9-2587		*******************************		
distantial in parties . managed the	DEPTH INCHES HORIZON COARSE SAND SAND SAND SAND SAND SAND SAND SAND														
777	0-3	Ap	0.1a	0.4	0.5	1.1	23.7	56.1	18.1	60.7	19.8	-	sil		

1-___

Soil Type: Rago silt loam Soil Ros.: S54Colo-32-4

Togation: 50 feet north, 3/10 mile west of southeast corner Sec. 8. MOS. NAW. Kit Carson County. Colorado.

Physiographic Position: Broad flat in the uplands.

Topography: Mearly level to very gently undulating slopes of 2 to 1 percent.

Drainage: Moderately well drained.

Vegetation: Wheat stubble and seasonal weeds.

Use: Cultivated to wheat during the current season.

Sempled by: James Allen and A. J. Cline, September 3, 1954.

Described by: A. J. Cline.

Horizon and Lincoln Lab. No.

Ар 2579 0 to 3 inches. Hight brownish gray (10YR 6/2 dry) to dark grayiah brown (10YR 4/2 moist) silt loam; soft when dry, very friable moist; weak very fine granular structure; noncalcareous; lower boundary clear and smooth.

3 to finches. Gravish brown (10VR 5/2 Are) to varie dark country brown (10VR 3.5/2 motet) light

B2cab 2583

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angular blocky; noncalcareous; the peds in this horizon have some white and gray flecking on their surfaces, particularly in the lower inch of this horizon; lower boundary clear and smooth.

B21 6 to 11 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) heavy silty 2581 clay loam; hard (dry), friable (moist); strong fine prismatic structure breaking to strong medium angular blocky; noncalcareous; the horizon has a few thin patchy Tonhautchen; lower boundary clear and smooth.

B2b 11 to 16½ inches. Gray (10TR 5/1 dry) to very dark gray (10TR 3/1 moist) heavy silty clay loam; hard (dry) friable (moist); moderate medium prismatic breaking to strong fine angular blocky; noncalcareous; the horizon contains moderately thick, relatively prominent Tonhautchen; lower boundary is abrupt and smooth.

16½ to 19½ inches. Variagated light brownish gray (10YR 6/2 dry) and pale brown (10YR 6/3 dry) to very dark grayish brown (10YR 3/2 moist and grayish-brown 10YR 5/2.5 moist) light silty clay loam; hard (dry), friable (moist); moderate medium prismatic, breaking to strong fine angular blocky; calcareous; the horizon contains moderate amounts of small calcium carbonate concretions; Tonhautchen are moderately thick and relatively prominent; variation in color is due to the intense worm working in which materials from the horizons above have been thoroughly worked into this horizon. In addition it appears that some of the material from the above horizon have been washed down into structural cracks and now coat the surfaces of the aggregates there. Lower boundary gradual and smooth.

B3cab 19½ to 26 inches. Light brownish gray (10YR 6/2.5 dry) to grayish brown (10YR 5/2.5 moist) light 2584 silty clay losm; hard (dry), friable (moist); weak coarse prismatic structure, breaking to moderate medium angular blocky; calcareous; the horizon contains moderate smounts of accumulated lime chiefly as lime flour and as concretions; Tonhautchen are moderately prominent; this horizon is also thoroughly reworked by worms and contains casts and channels filled with darker materials from the horizons shows

SOIL Richfield loam SOIL Nos. S63Colo-58-8 LOCATION Sedgwick County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 18512-18517, 18581-18582 March 1967

	1 Methods	<u> </u>						Size clas	s and parti	cle diamete	er (mm)	3A1						
			Total					Sand		Sit	t			[3Ala		Coa	rse fragme	nts 2,
Depth	Horizon	Sand	Silt	Clay	Very	Coarse	Medium	Fine	Very fine		int, III	Int. 🗓		Noncar	-		382 > 2	ļ
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6-14	B2t	30.0	38.4	31.6	1.6	4.3	3.7	5.4	15.0	25.2	13.2	43.1	15.0	322		3		
14-21	B3	25.4 40.1	51.0 44.7	23.6	0.3	1.5	1.5	2.6	19.5	32.2 27.4	18.8	53.2 52.8	5.9	24 14		1		
2133 33-52	Clca IIC2ca	70.6	18.8	15.2 10.6	3.9	5.0 10.8	4.1 10.7	6.2 18.2	22.1		17.3 6.1		18.0	10		11	6	
52-78	IIIC3ca	80.1	10.2	9.4	12.3	15.4	12.0	22.6	18.1	12.7 6.0	4.2	49.6 36.2	43.6 62.3	9		27	0	
6-8		33.6	37.6	28.8	1.4	4.8	4.5	7.0	15.9	24.1	13.5	43.8	17.7	-			ļ —	
8-13	<u>a</u>	29.1	40.4	30.5	1.6	3.6	3.3	5.4	15.2	25.7	14.7	43.9	13.9					
	6Ala	6Bla	<u>-</u>	Carbo	onate			Bulk densit		4D1		ater conte					рН	
Depth	Organic	Nitrogen	C/N	as C	CO3	Ext.		4Ald	4А1Ъ		4B4	4Blc	4B2	4C1			8сть	8C1
(ln.)	carbon		","	6 <b>E2a</b>			Field State		Air Dry	COLE	Field State		15- Bar	1/3-to 15-Bar			Sat. Paste	(1:1)
	Pct.	Pct.		<2 mm. Pet.	Pet.	Fe Pct.	g/cc	g/cc	g/cc		Pct.	Pct.	Pet.	in./in				
0-6	0.74	0.080	9	-(s)			1.35	1.33	1.39	0.014	18.4	22.4	9.6	0.17				6.7
6-14	0.65	0.072	9	-(s)	1		1.36	1.28	1.49	0.052	19.8	25.5	14.8	0.14		1		7.2
14-21	0.54	0.072		tr(s)					1.40a	0.044	10.7d	34.Od	12.0	0.27		<u> </u>		7.8
21-33	0.33	0.042	8	8	1		1.50	1.48	1.50	0.003	6.6	17.4	9.8	0.11			l	8.4
33-52	0.12			4	1		1.44	1.43e	1.44	0.003	7.5	17.6	5.5	0.16			7.9	8.5
52-78	0.03		-	3			<del> </del>						4.7					9.1
6-8 8 <b>-</b> 13	0.66 0.74			ŀ	1				ŀ	1			13.1 12.8					
	0.14																	
	<u> </u>	Extractal	ole bases	5 <b>Bla</b>		6Hla		h.Cap.	<u> </u>		8a	8Ala			8D3	[ 	Base sati	uration
	6N2a	602a	6P2a	692a				5Ala	i		Water	Elec.			_		5C3	5C1
Depth (In.)	Ca	Mg	Na	к	Sum	Ext. Acidity		NH ₄ OAc			at Satu- ration	Cond.			Ca/Mg		Sum Osttions	MEĐĮ CI
				<u> </u>	meq/100 (			-			Pct.	umpoku					Pct.	Pct.
0-6	10.7	3.5	0.1	2.0	16.3	2.9	19.2	16.0							3.1		85	102
6-14	10.6	3.7	tr	2.0	16.3	3.2	19.5	16.0						ļ	2.9		84	102
14-21		1	0.1	2.2	١.,.	1		24.0						ļ	2.3			-
	16.8 f		-												12.3		i	
21-33	12.0 f	5.2g	0.1	2.1	19.4			16.0			26 5	0.79	ļ	1	ī i ŭ		i .	
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21-33 33-52	12.0 f 6.6 f	3.6g	0.4	1.8	12.4			10.5			26.5	0.72			1.8			
21-33 33-52 52-78 6-8	12.0 f 6.6 f	3.6g	0.4	1.8	12.4			10.5			26.5	0.72			1.8			
21-33 33-52 52-78 6-8	12.0 f 6.6 f 5.0 f	3.6g 2.6g	0.4 1.0	1.8	12.4		Imper	10.5	yer no	rtione			horizo	n ware	1.8	ed san	arata)	v
21-33 33-52 52-78 6-8	12.0 f 6.6 f 5.0 f	3.6g 2.6g	0.4 1.0	1.8	12.4	8	Upper a	10.5 7.7	wer po	rtions	of the	≥ B2t	horizo	n were	1.8 1.9	ed sep	aratel	y
21-33 33-52 52-78 6-8 8-13	Ratios SD2 NHLOAC	3.6g 2.6g	0.4 1.0 801 15-Bar	1.8	12.4		Upper afor passpecti	10.5 7.7	wer po	rtions	of the	≥ B2t	horizo	n were	1.8 1.9	ed sep 18582	aratel	у
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21-33 33-52 52-78 6-8 8-13 Depth ((In.)	Ratios 8D2 NHLOAC CEC 0.73 0.50 1.00	3.6g 2.6g	0.4 1.0 8D1 15-Bar Water 0.44 0.47 0.51	1.8	12.4	b. c. d. e.	for passpecti Few grades & kg 6.6 kg One cla 1.34 g materia	and lorrtial wely. ains or dec. cal. (Mereto er.	f carbo 52 inc alculation 4, xtract:	is; lab ches (i ted to A). ion (M	of the	B2t ry num c6A). de vol	bers a	re 185	sample	18582	, re-	y

Soil Type: Richfield loam

Soil Nos.: 863Colo-58-8 Location: 250 feet east, 140 feet morth of south quarter corner, Sec. 19, TlOW, R44W, Sedgwick County, Colorado. Climate: Continental climate, average annual precipitation 17.5 inches, frost-free season of 147 days, mean annual temperature of 49.6 degrees F.

Elevation: 3,800 feet

Seeded to western wheat, blue grams Vegetation:

Parent Material: Losse

Physiographic Position: Upland

Relief: Convex 4 percent east facing slope

Drainage: Well drained Moisture: Hearly dry

Stoniness: Few small gravels throughout

Salt or Alkali: Mone

Erosion: Slight, primarily water
Sampled by: R. C. Accola, J. I. Brubacher, R. B. Grossman, R. Moreland, E. M. Payne, and J. L. Walker: July 10, 1963

Described by: J. I. Brubacher

Horizon and Lincoln Lab. No.

O to 6 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) losm; weak Ap 18512 fine granular structure; soft dry, very friable when moist; noncalcareous; clear smooth boundary.

6 to 14 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) clay loss; B2t 18513 strong medium prismatic breaking to s trong medium subangular blocky structure; slightly hard dry, very friable when moist; noncalcareous; thick continuous clay skins; clear smooth boundary.

14 to 21 inches. Pale brown (10TR 6/3 dry) to dark brown (10TR 4/3 moist) and dark grayish brown (10TR 4/2 crushed) losm; moderate medium prismatic breaking to moderate medium subangular blocky B3 18514 structure: soft drv. very friable when moist: noncalcareous: thin Datchy clay skins: clear smooth

## boundary.

21 to 33 inches. Very pale brown (10TR 7/3 dry) to brown (10TR 5/3 moist) loam; weak medium prismatic Clos 18515 breaking to weak medium subangular blocky structure; soft dry, very friable when moist; very highly calcareous; free lime visible along cleavage lines; clear smooth boundary.

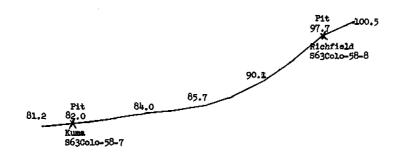
IIC2ce 33 to 52 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) fine sandy loam; weak medium 18516 structure breaking to weak medium subangular blocky structure; slightly hard dry, very friable when moist; very highly calcareous; visible stone line; pockets of loam and sand; clear wavy boundary.

52 to 78 inches. Pink (7.5YR 7/4 dry) to brown (7.5YR 5/4 moist) coarse sandy loam; massive; slightly IIIC3ca 18517 hard dry, very friable when moist; very highly calcareous; clear wavy boundary.

78 to 138 inches. Pink (7.5YR 7/3 dry) to brown (7.5YR 5/3 moist) sand and gravel; single grain; TTTCL loose when dry and moist; slightly calcareous; clear wavy boundary.

138 to 172 inches. Pink (7.5YR 7/4 dry) to brown (7.5YR 5/4 moist) sandy loam; massive; slightly hard TITES dry, very friable when moist; slightly calcareous.

## Landscape Profile:



Horizontal scale

200 feet

Vertical scale

10 feet

Bureau of Public Roads Samples: Ap, B2t, and Clca horizons.

Mineralogy (Method 7Bl): B2t horizon. Count on very fine sand: 40 percent quartz; 30 percent feldspar; 15 percent compound grains; 10 percent glass shards; accessories include green hornblende, epidote, mica group, primary carbonate, zircon, in approximate order of abundance. Orthoclase is the most common feldspar, with substantial albite, appreciable oligoclase-andssine, and some microcline. The compound grains appear to be mostly altered feldspar but with some altered volcanic glass.

Clea horizon. Count on very fine sand: 30 percent quartz; 25 percent feldspar; 20 percent compound grains; 25 percent glass shards; accessories include the same as for B2t. Other remarks for B2t pertain.

SOIL Richfield loam SOIL Nos. S63Colo-58-9 LOCATION Sedguick County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska
General Methods: LA, 1Blb, 2Al, 2B

LAB. Nos. 18518-18523 March 1967

Genera.	T ME WHOO	5: <u>"L</u> A	, ibio	, ZAL,	ZB			01		ala all	(m.c.)	242		····				
		<del></del>	Total					Size clas	ss and part	icle diamete Si		3A1	<del></del>	ЗА1Ъ	341-			
		⊢—	TULAT	T	<del> </del>			28na		- 31	π 1		}	SALD	3Ala Noncar-	Çoa	rse fregme	nts 2A2
Depth	Horizon	Sand	Silt	Clay	Very	Coarse	Medium	Fine	Very fine	l	Int. III	Int. 🎞	ľ	Lamo	bonate	<b>&gt;-</b> 2	3B2 > 2	!
(ln.)	1	(2-0.05)	(0.05-	( = 0.002	coarse (2-1)	(1-0.5)	(0.5-0.25)	(0.25-0.1)	(0.1-0.05)	0.05-0.02	(0.02-	(0.2-0.02)	(2-0.1)	COLOR		10	X(VGL < 19)	
		8.	0.002)	1	1 (2-1)	,	ľ	J	ľ	l	0.002)	Ĭ.	l	1	Clay CODOE			
0-6	8	100 U	120 1	17-7-1	10.0-		t. of -< 2		130 6	10- 1	130.0		AZ A		7	Pct.	Pet.	<u> </u>
6-14	Ap B2t	43.8 28.7	39.1	17.1 34.2	2:9	6.9	6.7	9.7	17.6	27.1	12.0	49.7	26.2	10.8	17	8	14	
14-19	183	29.6	37.1 47.4	23.0	0.8		4.0	5.8	13.3	24.7	12.4	41.0	15.4	25.3	34	3		
19-29	Clca	31.1	55.3	13.6	1.1	3.0	3.1	4.7	18.0	30.3	17.1	50.8	11.6	<u> </u>	23	2	<b>-</b>	
29-39	C2ca	59.2	16.1	24.7	8.8	10.2	10.4	18.2	11.6	32.2 5.3	23.1	55.4	10.2 47.6	0.0	14	.3	ŀ	1
39-70	C3ca	77.3	8.6	14.1	7.8	14.1	15.8	25.0	14.6	5.5	10.8	26.4	62.7	8.6	16 14	21 18		
35-10	U)CE	11.3	V.0	1	1.0	17.1	1).0	2).0	14.0	7.7	3.1	33.1	02.1		14	10		
	ļ						٠,											
	6Ala	6Bla		Care	onate	602a	1	Bulk densit		  401	1	ater conte					pH	
			į	as C	eCO3	Exct.	4Ala	4Ald	4А1Ъ	1701	4B4	4Blc	482	4C1	1		Встр	801a
Depth	Organic carbon	Nitrogen	C/N		3ALA	Iron	Field		Air		Field		15-	1/3- to			Sat.	
(in.)	<u>p</u>	1			<0.002		State		Dry	COLE	State		Bar	15-Bar			Paste	(1:1)
	_ <del>-</del>	1		<2 mm		Fe					10000						L BO VE	
	Pct.	Pct.		Pet.	Pct.	Pet.	g/cc	g/cc	g/cc		Pct.	Pct.	Pct.	in/in.				
0-6	0.86	0.090	10			0.4	1.32	1.30e		0.013	13.9	17.7	7.8	0.12				6.2
6-14	0.65	0.074	9	-(a)		0.7	1.47	1.35	1.61	0.059		25.9	15.3	0.14			į.	7.0
14-19	0.53	0.069	8	tr(s)	-	0.4	1.30	1.24	1.34	0.028	12.6	24.1	u.i	0.16				7.9
19-29	0.36	0.049	7	5	tr	0.3	1.28	1.25	1.30	0.014	13.6	23.3	11.0	0.15				8.3
29-39	0.16		1	25	9	0.2	l	i		1			9.7	'			İ	8.7
39-70	0.02	ļ		3	tr	0.3							6.7	ļ			8.0	9.1
·																		
-	<u> </u>	Extractal	ole bases	5Bla		6HLa	Cast. Ex	h.Cap.			8A	8Ala		<u>                                       </u>	8D3		Base sat	uration
	6N2a	602a	6P2a	692a	T	]	5A3a	5ALA	1	1	Water	Elec.			*		5¢3	5C1
Depth (In.)						Ext.	Share			]	at	Cond.	į.				Sum	1
(111.7	Ca	Mg	Na	K	Sum	Activity	Certifone	MED [†] CNC			Satu-	1	ŀ		Ca/Mg		Cations	MELLOAC
			1		l	l	ł	F		į	ration	١.		į			i	
	-	1	T .		meq/100 g	<u> </u>	1-63	-	<del>                                     </del>		Pct.	mabolem	<u> </u>	<u> </u>			Pct.	Pct.
0-6	7.8	2.7	tr	1.7	12.2	4.2	16.4	12.9		1	ļ		ľ		2.9		74	95
6-14	17.3	6.3	0.1	2.4	26.1	2.6	28.7	25.0		1		ŀ	l		2.7		91	104
14-19	15.3 d	5.7e	0.1	2.2	23.3	<del> </del>	<del> </del>	22.7	ļ <u></u>	<del> </del>		<del> </del>	├──	<del> </del> -			<del></del>	<del> </del>
19-29		5.6e	0.2	2.6 1.8		ł	l	18.9				ŀ	İ		2.2 1.4		ł	
29-39	6.3 a	4.6e		1.0	13.9		1	11.3			00.0		l	ł			l .	l
39-70	5.2 d	-2°A8	1.8	H-7	12.6	<del> </del>	+	10.1	<del> </del>	<del> </del>	23.2	1.14		1	1.3		<del>                                     </del>	
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	Ratios	s to C	lay	<u> </u>	<u> </u>	<u> </u>				<u> </u>								
Donth	802	802	801	]		a. F	en Bla	ins of	carbo	nate b	elow 1	9 inch	<b>48</b> .					
Depth (in.)	NH _L OAc	Ext.	15-Bar	1		b. 5	.5 kg/:	ee to:	29 inc	hes (M	ethod (	6A).						
(1112)	CEC	Iron	Water	1		c. 1	.25 g/	cc whe	n calc	ulated	to in	clude	volume	but n	ot weig	ght of	' > 2 m	m.
		1							hod 4A									
	<u> </u>	<u> </u>	<u> </u>	<b></b>					tracti									
0-6	0.76	0.02	0.46	1			H _i cl-E	tOH ex	tracti	on. (Mer	thod 6	03a).						
6-14	0.74		0.45				•											
14-19	0.99	0.02	0.48	1	1	1												

19-29 1.35 0.02 0.81

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Soil Type: Richfield loam

Soil Mos.: 863Colo-58-9
Location: 1,584 feet west, 528 feet north of southeast corner, Sec. 11, TlOW, R45W, Sedgwick County, Colorado Climate: Continental climate, average annual precipitation of 17.5 inches, frost-free season of 147 days, mean annual temperature of 49.6 degrees F.

Elevation: 3,800 feet Vegetation: Cultivated

Parent Material: Loss Physiographic Position: Upland

Relief: Convex 3 percent southeast facing slope Drainage: Well drained

Moisture: Moist to 12 inches, nearly dry below Stoniness: Few small gravels throughout

Salt or Alkali: None

Erosion: Slight, primarily water
Sampled by: R. C. Accola, J. I. Brubacher, R. B. Grossman, R. Moreland, E. M. Payne, and J. L. Walker: July 10, 1963 Described by: J. I. Brubacher

Horizon and Lincoln Lab. No.

O to 6 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) loam; weak fine granular structure; soft dry, very frieble when moist; noncalcareous; clear smooth boundary. Ap 18518

6 to 14 imphes. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) clay loam; strong medium prismatic breaking to strong fine subangular blocky structure; slightly hard dry, very 18519 friable when moist; noncalcareous; thin continuous clay skins; clear smooth boundary.

14 to 19 inches. Light brownish gray (10TR 6/2 dry) to dark grayish brown (10TR 4/2 moist) loam; moderate medium prismatic breaking to moderate medium subangular blocky structure; soft dry, very friable when moist; noncalcareous; thin patchy clay skins; clear smooth boundary. B3 18520

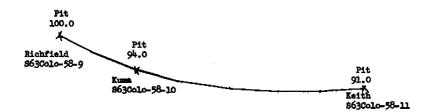
19 to 29 inches. Very pale brown (10YR 8/3 dry) to pale brown (10YR 6/3 moist) and very pale brown (10YR 7/3 crushed) loss; week medium prismatic breaking to week medium subangular blocky structure; 18521 soft dry, very friable when moist; very highly calcareous; clear smooth boundary.

29 to 39 inches. Light brownish gray (10YR 6/2 dry) to dark grayish brown (10YR 4/2 moist) sandy loss; weak medium prismatic breaking to weak medium subangular blocky structure; soft dry, very friable when moist; horison is 10 percent gravel; highly calcareous; clear smooth boundary. 18522

39 to 70 inches. Pink (7.5TR 7/4 dry) to brown (7.5TR 5/4 moist) gravelly sandy loam; thin discontinuous stone line at top of horizon; massive; slightly hard dry, friable when moist; 40 percent gravel; strongly calcareous; very highly calcareous on line coated gravel; clear wavy boundary. C3ca 18523

C4 70 to 132 inches. Pink (7.5YR 8.4 dry) to light brown (7.5YR 6/4 moist) sand and gravel; single grain structure; loose when dry and moist; noncalcareous; 50-60 percent fine gravel.

## Landscape Profile:



Horizontal scale

200 feet_

Vertical scale

10 feet

Bureau of Public Roads Samples: Ap, H2t, and Clea horizons.

Mineralogy (Mathods 7Al, 7A2): Apl, R2t, and C2ca horizons. Small to moderate amounts of well-crystallized mica (or illite) and kaclinite are present in the solum. Montanorillonite, poorly organized throughout the profile, increases from a trace in the surface to a moderate amount in the R2t. The C2ca has a moderate amount of montmorillonite and traces of mica (or illite) and kaclinite. The clays are more poorly ordered. Some calcite is present. The fine clay contains only montmorillonite and it is poorly crystallized.

	SOIL	TYPE	Rich silt	field loam			OCAT	rion	Prower	s Coun	ity, Co	lorado	)
	S	OIL NOS.	•	S <b>5</b> 80	Jolo-5	0-6	*****************	LAB.	NCS.	968	8 <b>-96</b> 96		••••••
	Ī	HORIZON	VERY COARSE SAND	OARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.00 52-7	CLAY	or ce.if)	3A1	2A2 > 2	TEXTURAL CLASS
	4-7		<0.1 ↓	0.3	0.4	1.4	14.4	53.4 40.6	30.1			- -	sicl
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Soil Type: Richfield silt loam

Classification: Chestnut
Location: 700 ft. W and 90 ft. N of S \( \frac{1}{2} \) corner, Sec. 32, T26S., Ri2W.,
Provers County, Colorado.

Date Sampled: November 6, 1998
Climate: Continental climate, average annual precipitation 15 to 16 inches,
elevation 3,700 feet. Frost-free sesson 166 days.

Vegetation: Sorghum. Parent Naterial: Leess. Envsiographic position: Upland.
Relief: Nearly level to slightly concave position, less than 1% slope.
Drainage: Well. Moisture: Dry. Watertable: None encountered. Stominess: Mome.
Sait or Alkali: None observed. Erosion: Moderate Erosion, primarily wind.
Soil Nos.: S-58-Colo-50-6
Described by: E. Milton Payne.
Lincoln Horison Hancoln Horison Lab. No. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) sitt losm; weak fine granular structure; loose when dry, very friable moist; non-celeareous; abrupt smooth boundary caused by tillage. 9688 Αp 0-4 inches Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) light silty clay loam; noderate coarse platy, very hard when dry, friable moist; thin nearly continuous clay skins on horizontal faces of peds; non-9689 4-7 inches AB calcareous; clear smooth boundary. 9690 B_{2lt} 7-12 inches Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2.5 moist) silty clay loam; moderate medium prismatic structure breaking to strong fine angular and subangular blocky structure; very hard when dry, firm when moist; moderately, nearly continuous clay skins; non-calcareous; clear smooth bou dary. B_{22t} inches Gravish brown (ICYR 5/2 dry) to very dark grayish brown 9691 (10TR 3/2.5 moist) silty clay loam; moderate medium prismatic breaking to moderate fine subangular blocky structure; very hard when dry, firm moist; thin nearly continuous clay skins; noncalcareous; clear smooth boundary. Light brownish gray (10YR 5.5/2 dry) to dark grayish brown (10YR 3.5/2 moist) silty clay loam; moderate medium prismatic breaking to moderate fine subangular blocky structure; hard when dry, firm moist; very thin patchy clay skins; slightly calcarsous in matrix with numerous small B_{3ca} 18-26 9692 inches lime snots; clear amouth boundary. Cleal 26-34 inches 9693 Grayish brown (17 5/2 dry) to dark grayish brown (17 4/2 breaking to weak coarse subangular blocky; hard when dry, firm moist; strongly calcareous with prominant lime nodules about 1/h inch in diameter; clear smooth boundary. Pale brown (1Y 6/3 dry) to grayish brown (1Y 5/2.5 moist) light sitty clay loam, very weak coarse prismatic breaking to moderate fine subangular blocky structure; hard when dry, friable moist; many krotovine; violently calcarsous 9691 Clca2 34-12 inches with numerous large lime spots; clear smooth boundary. Light gray (1Y 7/2 dry) to grayish brown (1Y 5/2.5 moist) silt loam; very weak medium prismatic breaking to very weak medium subangular blocky structure; hard when dry, friable 9695 1.2-49 inches moist; considerable mixing of the horizon with krotovina and worm casts, the larger ones being (10IR 3/2 moist) violently cal careous. Light gray (10YR 6.5/2 dry) to grayish brown (10YR 5/2.5 moist) silt losm; massive; slightly hard when dry, very friable moist; violently calcareous. 49-70 inches 9595 Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) silt loam; massive; slightly hard when dry, friable moist;

110-132 Pink to reddish yellow (7.5TR 7/5 dry) to brown (7.5TR 14/5 moist) silt losm; massive; slightly hard when dry, very friable moist; strongly calcareous with large white lime

90-110 inches

violently calcareous.

violently calcureous.

fink (7.5YR 7/4 dry) to brown (7.5YR 5/4 moist) silt loum;

massive; slightly hard when dry, very friable moist;

Aureau of Public Roads Samples

O to 4 inches 7 to 12 inches

	SOIL	SURVEY	LABOR	ATORY	Lincoln,	Nebr.	May 1	959	***************
	SOIL	TYPE	Richfield silt loam	LO	CATION	Prowers	County, C	olorado	
		soil nos.		50-7					
i <del>-</del>	DEPTH		IBIA PA	RTICLE SIZE D	VERY	fire nm.) (per	cent) 3	A1 2A2	XTURAL
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Soil Type: Richfield silt loam Classification: Chestnut Incation: 100 ft. S and 50 ft. W of N + corner; Sec. 21, T265, Ru2W, Prowers County, Colorado. Date Sampled: November 6, 1958 Climate: Continental climate, average annual precipitation 15 to 16 inches, elevation 3,700 ft. Frost free season 166 Days. Vegetation: Wheat-fallow, wheat in 1958. Parent Matarial: Loess.
Physiographic position: Upland. Pelief: Mearly level to slightly concave position. Drainage: Well. Moisture: Moist. Matertable: Mone encountered. Stonings: Mone. Salt or Alkali: Home observed. Erosion: Slight erosion, principally wind. 8011 Nos.: 3-58-Colo-50-7 Described by: E. Milton Payne. Mancoln Borizon Lab. No. 9697 Grayish brown (10YR 5/2 dry) to very dark grayish brown Ap (10TR 3/2 moist) silt loam; week fine granular becoming platy in lower part, slightly hard when dry, very frieble inches moist; noncalcareous; abrupt smooth boundary caused by tillage implements. Grayish troom (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) light silty clay losm; weak coarse platy 9698 A Bo 3-6 inches breaking to moderate fine granular; very hard when dry, firm moist; thin very patchy clay skins; noncalcareous; clear smooth boundary. 9699 6-15 inches Grayish brown (10YR 5/2.5 dry) to dark brown (10YR 3/3 moist) Balt silty clay loam; moderate medium prismatic structure; breaking to strong fine angular and subangular blocky structure, hard when dry, firm moist; moderate nearly continuous clay skins; noncalcareous; clear smooth boundary. 9700 B_{2ca} 15-21 inches Grayish brown (10YR 5.5/2 dry) to dark grayish brown (10YR 4/2.5 moist) silty clay loam; moderate medium prismatic structure breaking to moderate fine subangular blocky; hard when dry, firm moist; thin to moderate nearly continuous clay skins; strongly calcareous; clear smooth boundary. B ca inches Gravish brown (10YR 5/2.5 dry) to brown (10YR h.5/3 moist) 9701 silty clay loam; weak coarse prismatic breaking to moderate medium subangular blocky structure; hard when dry firm moist; thin nearly continuous clay skins; violently calcareous with numerous small lime spots; clear smooth boundary. Pale brown (1Y 6/2.5 dry) to brown (1Y 5/3 moist) silty 9702 Cleal 32-38 inches clay loam; very weak coarse prismatic breaking to moderate medium subangular blocky structure; hard when dry friable when moist; thin patchy clay skins on vertical faces of peds; violently calcareous with numerous lime spots; gradual smooth boundary. 9703 Clca2 38-48 Light brownish gray (10YR 6.5/2 dry) to grayish brown (10YR 5/2.5 moist) light silty clay loam; weak medium to inches

coarse subshaular blocky structure; hard when dry, friable moist; few thin patchy clay skins; violently calcareous with a few lime spots; gradual smooth boundary.

9704 c⁵ 1.8-57 Light gray (10YR 7/2 dry) to brown (10YR 5/3 moist) silt losm; very weak medium subangular blocky structure; slightly inches hard than dry, very Cricole moist; violently calcareous.

9705 C3 57-114 Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) s'it loam; massive; slightly hard when dry, very friable inches (Sampled moist; violently calcareous.

to 72 inches)
116-132 Pink (7.5YR 7/4 dry) to brown (7.5YR 5/4 moist) silt loam; D massive; slightly hard when dry, very friable moist; inches violently calcareous.

Bureau of Public Roads Samples

0 to 3 inches 6 to 15 inches 57 toll6 inches

SOIL CONSERVATION SERVICE SOIL Booky Bord silty clay loam 4/ SOIL Nos. SSOColo-50-3 LOCATION Provers County, Coloredo ____LAB. Nos. _____14659-14661 1Ela Size class and particle diameter (inm) 341 Total Sand 3**Ala** Coarse fragments Clay Coarse (1-0.5) Medium Fine Very tine (0.5-0.02) (0.25-0.1) (0.1-0.05) 0.05-0.02 (0.02-0.002) Int. III (0.2-0.02) 2A2 > 2 Silt Carbon Non-Sand Clav Depth Harizon (2-0.1)2 - 19 19 -76 carbon (In.) (2-0.05) (0.05-( < 0.002) (419) 0.002) __ Pct. of __ <= 76 mm ate 12.5 53.7 33.8 0.16 0.4c 0.4c 1.3c 10.3c 30.2 23.5 41.4 2.2 12.0 54.1 33.9 0.16 0.3c 0.4c 1.2c 10.0c 28.4 25.7 39.2 2.0 13.5 60.7 25.8 0.3c 0.2c 0.3c 1.1c 11.6c 38.2 22.5 50.6 1.9 Ťr. AT∕2 32 Tr. AC 22 Tr. 6Ala 6Bla 6Elc 4D2 4Ale 4AIb COLE 4**B**3 ABID ABE ABE ACI 8сть 801a | 801a Organic Nitrogen C/N Carbon-2-Bar 15-Bar 1/3- Sat. Bar to Paste 15-Bar 30-cm ALT-30-cm 1/3-(In.) Carbon ate as 1:10 Dry Dar CaCO 3 **₫/** Pct •/ Pet. Pet. Pet. No. 14.9 0.13 7.7 7.8 8.4 29.2 25.5 20.5 16.1 0.13 7.6 7.8 8.5 Pct 0.117 1.22 0.052 6 1.25 0.119 6 0.050 0.55 0.065 9 12.5 7.9 8.6 7.6 Cat. Erch. SAL Water extract from saturated paste Extractable bases 5818 Cap. 6Pla 601a 8Ala 6P2a 602a Depth Electrical Mg CO 3 **HCO**₃ CI SO 4 Сa conductiv NES, CA mmbo/cm 2.0 1.4 0-5 1.5 1.1 20.1 8.9 0.5 5-11 1.3 20.9 6.4 0.6 11-16 18.5 6.8 1.6 0.4 Ratios to Clay 8m. 8m2 8m. 84 5102 a. This soil was sampled to study the effects of irrigation for about 50 years on certain soil characteristics. Only the Exchange Water Depth Gypsum NELOAS NELOAS 15upper herizons were sampled. The soil should be compared with Saturation Na Colley S500010-50-1 and S600010-50-2 which were not immigrated. • TO THE

Soil Type: Backy Fert silty clay loam
Soil Nos: 500 Colo-50-3
Location: 750 feet west and 750 feet south of the east quarter corner, Sec. 13, T225, R45W, Provers County, Colorado.
Climate: Continental climate, everage annual precipitation 13 to 15 inches, frost-free season 165 days.

Elevation: 3,550 feet. Parent Meterial: Iosas. Physiographic Position: Upland. Pallef: Hearly level, 0-1 percent slopes.

Brainage: Good. Misture: Meist. Water Table: None.

Salt or Alkali; Possible slight selimity.

Brogion: Siltetion.

Present Une: Irrigated crepland - sorghum. Recaribed by: Jumes P. Pannell, November 15, 1960.

Marison and Lincoln lab. Bo.

AC 18661

O to 5 inches, Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist), dark grayish brown (10YR 3.5/2 moist crushed) silty clay loss; weak fine granular structure; dry hard, moist firm; strongly afterwescent; class smooth boundary. 421 13699

5 to 11 inches. Grayish brown (10TR 5/2 dry) to very dark grayish brown (10TR 3/2 moist) dark grayish W. هي. (L---Ч

> ll to 16 inches. Brown (10YR 5/3 dry) to dark brown (10YR 4/3 moist) brown (10YR 4.5/3 moist crushed) silt lesm; weak medium subangular blocky structure to weak fine subangular blocky; dry slightly hard, moist friable; violently effervescent; some mixing of upper horizons in worm and root holes; clear smooth boundary.

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		<u> </u>	Total	•			Sand		Ciess and	perticia dia		<u> </u>	· · · · · ·	Clay	3Ala	Con	se fragme	nts
Depth (In.)	Harizon	Send (2-0.05)	Silt	Clay ( < 0.002)	Very coarse (2-1)	Coarse .(1-0.5)	Medium	1	Very fine (0.1–0.05)	0.05-0.02	Int. III	int. II (0.2–0.02)	(2-0.1)		- Non- carbox ate		2 - 19 Pct.	19 -76
0-4	Appl Logs.	10.0	56.5	33.5	0.36	0.50	0.44	1.44	7.44	22.4	34.1	30.5	2,6	1	33	Tr.	-	I
4-9	An2	8.4	54.8	36.8	0.25	0.34	0.34	1.14	6.54				1.9	74.	37	Tr.		
9-18	AC	20.0	55.8	24.2	0.24	0.44	0.64	2.84	16.04	34.1		52.2	4.0	5_	19	Tr.		
		-																
		ļ <u>-</u>																
	6Ala	63)a			6Ele			Bulk densit	у	420	W	ater conte	ut .				0	H
Depth (in.)	Organic carbon	Nitrogen	C/N		Carbon- ate as			HAIG 30-cm.	AATD AATT Bey			4311 1/3- Bar		432 15-36:	401 1/3- Bar to	Set. Sat. Paste	8CLs 1:1	801a 1:10
	Pet.	Pct.			Pct.		g/cc	g/cc	g/cc	₹/	Pct.	Pct.	Pct.	Pet.	15-101 12/13			
0-4	1.66	9.340	12	ļ	<u> </u>		ļ		1.43					15.0	0.16	7.7	7.9	8.4
4-9	1.53	0.132	12 B	ļ <u></u>	7		<del>                                     </del>	1.30	1.62	0,056	26,2	27.8	21.6	12.	7 0.17	7.8	7.9	8.5
9-18	0.69	0.687												12.		141	147	<u> </u>
				-			<u> </u>											
													extract from					
Depth		Extractat	6P2a	581a 602a				Brok.	841		6Pla	601a	expect non					8Ala Electrical
(ln.)	Ca	Mg	Na	K				RES _{IL} CAM	C#	Mg	Na	K 	ita.	co3	HCO3	C1	so ₄	canductiv ity mmho/cr
<u>0-4</u>	-	7	0.8	1.5	meq/100 g		<del>1</del>	22.5	_	1	T 4.6	0.8	<del>                                     </del>	T	1		<del>-</del>	1.2
1-0	<del> </del>	-	0.6	1.2			<del>                                     </del>	22.9			2.8	0.4			† ·			0.8
9-18			9.6	0.9				17.0			3.3	0.4						0.9
	<u> </u>		ļ				<u> </u>			ļ	<u> </u>	<u> </u>	-		ļ			
		ļ									-			<u> </u>				

SOIL Booky Ford silty clay loss a/ SOIL Nos. 2600010-50-k LOCATION Provers County, Colorado

Boil Type: Rocky Ford silty clay loss
Soil Ros.: S60Calo-50-4
Location: 0.3 mile morth and 100 feet east of the south quarter corner, Sec. 34, T228, RA3W, Provers County, Colorada.
Climate: Continental climate, average annual precipitation 13 to 15 inches, frost-free season 165 days.

Elevation: 3,550 feet.

Parent Material: Losss. Physiographic Position: Upland. Relief: Hearly level, 0-1 percent slopes.

Drainage: Good. Moisture: Moist. Water Table: None.

water lable: Mose. Salt or Albali: Possible slight salinity. Brosion: Skitation.

Present Use: Drigated cropland - sorghum.
Described by: Junes P. Ramell, Rovember 18, 1960.

Horrison and Tincoln Lab. No.

CI.

<u> Aiger</u>

0 to 4 inches. Grayish brown (10YR 5/2 dry) to dark grayish brown (10YR 3.5/2 moist and crushed) silty claw lass; weak year fine granular structure; dry slightly bard, moist friable; violently efferwescent: Apl 14660

abrupt smooth boundary.

moderate fine granular; dry hard, modet firm; violently effervescent; abrupt smooth boundary.

9 to 18 inches. Brown (10YR 5/3 dry) to brown (10YR 4.5/3 moist and crushed) silt loss; weak medium sub AC 14664 angular blocky structure to very weak very fine granular; dry slightly hard, moist very friable; violently affervescent; few worm casts; clear smooth boundary.

18 to 30 inches. Pale brown (10YR 6/3 dry) to brown (10YR 5/3.5 moist and crushed) silt loss; very weak medium subengular blocky to messive structure; dry soft, moist very friable; violently effervescent with

SOIL Booky Ford stilty clay leam a/ SOIL Nos. #60Cole-50-7 LOCATION Fromtre County, Coloredo

SOIL SURVEY LABORATORY Idnooln, Nebreska LAB. Nos. 14676-14678 Jamesry, 1966

Total   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   Social   So				1Bla					Size	class and	particle dia	meter (mn	)		RAI				
Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Sect								Sand			Si	ilt				347-	Сон	rse fraem	ents
C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C-0.05   C	B			6.14	T	1	_	l	_	I		T	lot. II						T
Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared   Compared		Horizon									0.05.000		(0.2-0.02)	(2-0.1)			- <del>- 2</del>	2 - 19	19 - 76
17.2   18.1.5   18.1.3   10.2   10.5   10.5   5.59   8.68   22.0   19.1   33.9   8.6   1   10.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.5   1.	(111.7		(2-0.05)	0.002)	1 = 0.002	(2-1)	(1-0.5)	10.5-0.28)	(0.23-0.1)	10.1-0.03)	0.05-0.02							1	•
0-54   3p1   17.2   31.5   31.1   0.2   0.98   1.08   5.98   8.68   29.4   19.4   30.9   8.6   1   10.    3-18   40   37.0   39.2   23.8   0.2   1.18   3.00   12.78   39.00   27.5   11.7   55.0   17.0   2   22   72.    5-18   5-18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18   5.18		1	<u> </u>					Pct. of -	2 mm —	·						200			
19.1   10.1   10.1   1.6   1.7   1.6   1.7   1.6   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1.7   1	0-6	Ap1	17.2	41.5	41.3	0.2	0.95			8.6	22.0	10.	33.0	8.6	1	Jan .			T
2.3Å 40	6-13	2		10.1	A1.8	0.1		1.8							1			ļ	
Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   Carlos   C			37.0												9		7		
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Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate   Cate		6Ala	6)XIA	1		6ELe		_	Bulk densi	y		<u> </u>	ater conten	R				, <u> </u>	Н .
Carried   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Sect	Depth	Organic	Nitrogen	C/N		Carbon-			4Alc	4A33	COLLE	4B3	4800	432	4.32	401	8cm	8cta	8CL=
Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet			-	'	]				30-cm.	Air-		30-cm.	l 1/3-l	2- <b>3-r</b>	15-Ba				
Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet   Pet			1		1	CaCO ₃			1	Bry								717	TIME
1.70   0.155   11   6   1.36   1.66   0.066   30.0   35.4   31.1   17.5   0.12   7.8   7.8   8.5					1	'				_	4								ł
1.30   0.127   10   6   1.32   1.63   0.054   50.2   27.3   36.5   0.16   7.7   7.9   8.6	A &				-			g/cc								ń/in.	_ ~		D #
SA   Saluration   Saluration   Saluration   Saluration   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Saluration   Na   Salurat					-										- 17-5				
Depth (In.)   Ca   Mg   Na   K					_														
Depth (in.)   Ca   Mg   Na   K	<u> </u>	-0.52	0.002	-		-				1.00		23.2	21.0	70.7	10.7	0.10	7.7	7.9	2.5
Depth (in.)   Ca   Mg   Na   K		<del></del>	<del> </del>	<del>                                     </del>						<del></del>			1			<del> </del>			
Depth (in.)   Ca   Mg   Na   K		+	1	<del>                                     </del>					<u> </u>				<del>   </del>			-	-		1
Depth (in.)   Ca   Mg   Na   K		+	<del> </del>	<del> </del>					1				<del> </del>			<del>                                     </del>			<del> </del>
Depth (in.)   Ca   Mg   Na   K										<del> </del>			1			1—			<del> </del>
Depth (in.)   Ca   Mg   Na   K		1	1	t	t											i			<del>                                     </del>
Depth (in.)   Ca   Mg   Na   K																			
Depth (in.)   Ca   Mg   Na   K																			
Depth (in.)   Ca   Mg   Na   K																			
Depth (in.)   Ca   Mg   Na   K			Extractab	le bases	5 <b>Kla</b>			Cat. 1	breh .	BAL			Water e	stract from	saturated	paste			
Depth (in.)   Ca   Mg   Na   K				6P2a	602a	1 1						6Pla	6014				7		BALA
Ca   Mg   Na   K			i l											i			1		
SA   SDE   Ratios to Clay   Suration   Na   Saturation   Na   Saturation   Na   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pct   Pc	(in.)	Ca	Mg	Na	ĸ			1	III. OAc	Ca	Mg	Na	ĸ	i	co3	HCO3	Cl	SO 4	
SA   1.4   1.2   23.6   6.6   0.5   1.6			ļ į		ŀ				7	ļ				ı		į i			l "y
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Pct. Pct. Pct. Pct. Pct. Pct. Pct. Pct.	Depth	Water	Exchange-		Gypsum	8101	8182	510	8	bout 5	O year	*8 OR (	erteir	e soil	chara	cteris:	ities.	Only	the
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smooth boundary.

10 Elevation: 3,450 feet. Parent Material: Alluvium. Physiographic Position: Stress terrace. Relief: Mearly level, 0-1 percent slopes. Drainage: Good. Moisture: Moist. Water Table: None. Stoniess: None. Salt or Albali: Possible slight salinity. Brosion: Siltation. Present Use: Irrigated cropland - alfalfa. Described by: James P. Pannell, September, 1960. Borizon and Mancoln Lab. No. 0 to 6 inches. Grayish brown (10YR 5/2 dry) to dark grayish brown (10TR 3.5/2 moist and crushed) silty clay losm; moderate fine granular structure; dry hard, moist firm; violently affervescent; clear smooth Apl 14676 boundary. 6 to 13 inches. Grayish brown (10YR 5/2 dry) to dark grayish brown (10YR 3.5/2 moist and crushed) silty clay losm; weak coarse subangular blocky structure to weak fine subangular blocky; dry hard, moist firm; violently effervescent; clear smooth boundary. Ap2 14677 13 to 18 inches. Brown (10YR 5/3 moist) to dark brown (10YR 3.5/3 moist and 4/3 moist crushed) loss; weak coarse subangular blocky structure to weak fine granular; dry slightly hard, moist friable; violently effervescent; gradual smooth boundary. 14678

30 to 60 inches. Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist and crushed) stratified less, silt loss and very fine sandy loss; massive; dry soft, moist very friable; violently effervescent; a very few

18 to 30 inches. Brown (10TR 5/3 dry and 4/3 moist and crushed) stratified silt losm and loss; very weak coarse subangular blocky structure to massive; dry soft, moist very friable; violently effervescent; clear

soil <b>Roc</b> i	LABORATO							<b>860</b> 0			AB. Nos.					Januar	7, 196	6
		<del></del>	330										-	· · · · · · · · · · · · · · · · · · ·				
			11K1 Total	<u> </u>	<u> </u>	····	Sand	3120	class and		ineter (mm	<u>"</u> —	341	Clay	341a	Coa	rse fragmi	ents
Depth	Horizon	Sand	Sift	. Clay	Very	Coarse	Medium		Very fine		Int. III	int. [] (0.2-0.02)	(2-0.1)	ate	- Non-	242	2 - 19	19 - 7
(tn.)		(2-0.05)	(0.05- 0.002)	( = 0.002)	(2-1)	(1-0.5)	(0.5-0.25)	(0.25-0.1)	(0.1-0.05)	0.05-0.02	(0.02-		,0 0.0,	200	ate	(<19)	Pct	. of
		<u> </u>				<del>_</del> _	Pct. of -	2 mm					-			Pct.	< 7	mm
0-8 8-12	Was .	19.5	16.5	33.3	0.1	0.75	1.3	6.70 7.00	10.6	23.1	24.1 23.7	36. 38.	8.9	1	33	Tr.		┢
12-16	ÄĞ	34.2	30.4	26.4	0.1	0.90	2.2	13.5	17.5	25.7	13.7	52.		3	23			
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Soil Type: Rocky Ford silty clay loss Soil Nos.: S600ble-50-8

Location: 0.3 mile north and 100 feet east of the west quarter corner, Sec. 33, T228, R65W, Provers County, Colorado. Climate: Continental climate, average annual precipitation 13 to 15 inches, frost-free season 165 days.

Elevation: 3,585 feet.
Parent Material: Alluvium.

Physiographic Position: Stress terrace. Helief: Hearly level, 0-1 percent slopes.

Drainage: Good. Moisture: Moist. Water Table: Hone. Stoniness: None.

Salt or Alkali: Possible slight salinity.

Bresion: Siltetion.

Present Use: Irrigated cropland - corn. Bescribed by: Jusse P. Pannell, September, 1960.

Horison and Lincoln lab. No.

0 to 8 inches. Grayish brown (10TR 5/2 dry) to dark grayish brown (10TR 3.5/2 moist and 4/2 moist crushed) silty clay loss; weak fine granular structure; dry hard, moist firm; violently effervescent; clear smooth Apl 14679 boundary.

8 to 12 inches. Grayish brown (10YR 5/2 dry) to dark grayish brown (10YR 3.5/2 moist and 4/2 moist crushed) silty clay loss; weak coarse subangular blocky; dry hard, moist firm, violently effervescent; clear smooth boundary. 17699

12 to 16 inches. Brown (10YR 5/3 dry) to brown (10YR 4/3 moist and 4/2.5 moist crushed) silty clay loss; weak coarse subangular blocky structure breaking to weak to medium fine subangular blocky; dry hard, moist firm; violently efferwescent; clear smooth boundary. AC 14681

16 to 37 inches. Light yellowish brown (10YR 6/8 dry) to brown (10YR 5/3 moist and crushed) silt loam; very weak coarse subangular blocky to massive structure; dry soft, moist very friable; violently effer-vescent; clear smooth boundary. Œ.

37 to 45 inches. Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist and crushed) very fine sandy loam; massive; dry soft, moist very friable; violently effervescent; clear smooth boundary. œ

45 to 60 inches plus. Light yellowish brown (10TR 6/4 dry) to brown (10TR 5/3 moist and crushed) silt loss weakly stratified; massive; dry soft, moist very friable; violently effervescent with a few lime C3

	SOIL	SURVE	Y LABO	DRATORY	Y Lincoln,				****
	SOIL	TYPE.	Stecum gravelly	sandy loan	CCATION	Trout Chaffe	Creek Wat e County,	ershed, Colorado	·····
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Soil Type: Stecum gravelly sandy loam
Soil Nos.: \$57Colo-8-4
Location: Trout Creek Watershed, Chaffee County, Colorado.
Physiographic Position: Mountain side. Elevation 9,905 feet.
Topography: Steeply slepping convex south-facing mountain slope of about 35 percent gradient.

Drainage: Well drained.

Vegetation: Mountain mahogany, sage, spike muhly, fescue, and grama grass.

Use: National Forest lands.

John Retzer, A. J. Cline, E. M. Payne, T. Baber, W. Hunter, E. Wesswick, September 18, 1957. Collected by: John Ret: Described by: A. J. Cline.

Horizon and Lincoln Lab. No.

O to 3 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) gravelly sandy Al 8189 loam; soft when dry, very friable when moist; moderate fine granular structure; noncalcareous, approximate pH 6.8; about 25 percent of this horizon is gravel with some accumulation of gravel due to differential erosion on the surface of the soil; lower boundary clear and smooth.

3 to 9 inches. Grayish brown or light brownish gray (10YR 5.5/2 dry) to dark grayish brown (10YR 4/2 moist) gravelly light sandy loam; slightly hard when dry, very friable when moist; weak medium subangular AB 8190 blocky structure, breaking to moderate medium granules; noncalcareous, approximate pH 7.0; there are a very few thin patchy clay skins on some of the soil aggregates; about 40 percent of the horizon is gravel; lower boundary gradual and smooth.

9 to 13 inches. Brown or pale brown (10YR 5.5/3 dry) to brown or dark brown (10YR 4/3 moist) gravelly sand; slightly hard when dry, very friable when moist; single grained; noncalcareous, approximate pH 7.2; about 75 percent of this horizon is gravel and stone; lower boundary gradual and smooth. C1 8191

13 to 21 inches. This horizon is partially disintegrated granite and biotite schist rocks. C2 8192

Remarks: Profile upslope in position from Stecum, Soil Nos. S57Colo-8-5.

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Soil Nos.: Steens gravelly sandy loss
Soil Nos.: 857Colo-8-5
Location: Trout Creek Watershed, Chaffee County, Colorado.
Physiographic Position: Mountain side. Elevation 9,805 feet.
Topography: Steeply sloping convex south-facing mountain slope of about 35 percent gradient.
Drainage: Well drained.
Vegetation: Westerney of the convex south-facing mountain slope of about 35 percent gradient.

vegevaulon: Niue grama, sage, fescue, and scattered aspen and mountain mahogany.
Use: Mational Forest lands.
Collected by: John Retzer, A. J. Cline, E. M. Payne, T. Baber, W. Hunter and E. Wesswick, September 18, 1957.
Described by: A. J. Cline.

Horizon and Lincoln Lab. No.

O to 4 inches. Dark gray (10YR 4/1 dry) to black or very dark gray (10YR 2.5/1 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; moderate fine granular structure; noncalcareous; 8193 about 15 percent of this horizon is gravel; lower boundary clear and smooth.

4 to 9 inches. Erown (10YR 5/3 dry) to dark brown (10YR 3/3 moist) gravelly sandy loam; slightly hard 8194 when dry, very friable when moist; very weak fine subangular blocky structure; breaking to moderate fine granules; noncalcareous; there are a few thin patchy clay skins on the surfaces of the soil aggregates in this horizon; lower boundary gradual and smooth; about 20 percent of this horizon is gravel.

CI 8195 9 to 20 inches. Fale brown (10YR 6/3 dry) to brown (10YR 4.5/3 moist) gravelly sandy loam; slightly hard when dry, very friable when moist; very weak medium subangular blocky structure, breaking to single grains; noncalcareous; about 40 to 50 percent of this horizon is gravel and fractured rock fragments; lower boundary gradual and smooth.

Cr. 20 inches plus. Partially weathered granite bedrock.

Remarks: Profile intermediate in position on slope between Stecum Soil Nos. 857Colo-8-4 and 857Colo-8-6.

SOIL TYPE Steeum LOCATION Chaffee County, Colorado gravelly sandy loam Trout Creek Watershed,

SOIL NOS. 857Colo-8-6 LAB. NOS. 8196-8199

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DEPTH INCHES	HORIZON	VERY COARSE SAND	CGAŔSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 3	TEXTUR/ CLASS
		2-1	(-9,5	9.5-0.25	<b>0.25-</b> 0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02 <b>-0.00</b> 2	(≤19mm	)
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Soil Type: Stecum gravelly sandy loam

Soil Nos.: S57Colo-8-6

Incation: Trout Creek Watershed, Chaffee County, Colorado. Physiographic Position: Mountain slope. Elevation 9,680 feet.

Topography: Steeply sloping south-facing moutain side having about 30 percent gradient.

Drainage: Well drained.

Vegetation: Blue grama, sage, fescue, and scattered growth of aspen.

Use: National Forest lands.

Collected by: John Ret Described by: A. J. Cline. John Retzer, A. J. Cline, E. M. Payne, T. Baber, W. Hunter, and E. Wesswick, September 18, 1957.

Horizon and Lincoln Tab. No.

O to  $2\frac{1}{2}$  inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) sandy loam; 8196 soft when dry, very friable when moist; moderate fine granular structure; noncalcareous, approximate pH 6.8; approximately 15 percent of this horizon is gravel; lower boundary clear and smooth.

AB 8197 21 to 5 inches. Brown (10YR 5/3 dry) to dark brown (10YR 3/3 moist) gravelly sandy loam; slightly hard when dry, friable when moist; moderate fine granular structure; noncalcareous, approximate pH 6.8; this horizon is bordering on a textural B horizon and contains thin patchy clay skins on both the horizontal and vertical faces of some aggregates; lower boundary gradual and smooth; approximately 30 percent of this horizon is gravel.

5 to 8 inches. Brown or yellowish brown (10YR 5/3.5 dry) to dark brown or dark yellowish brown (10YR 4/3.5 moist) gravelly loamy sand; slightly hard when dry, friable when moist; weak coarse granular structure; noncalcareous, approximate pH 7.2; there are some patchy clayskins principally on the surface of the gravel in this horizon; about 75 percent of this horizon is gravel; lower boundary gradual and smooth. Cl 8198

8 to 17 inches. Yellowish brown (10YR 5/4 dry) to dark yellowish brown (10YR 4/4 moist) gravelly sand; 8199 slightly hard when dry, friable when moist; massive; noncalcareous, approximate pH 7.4; this is a horizon of partially weathered granitic bedrock and the consistence of the rock increases with depth. Approximately 90 percent of the horizon delineated is weathered rock and gravel.

Remarks: Profile downslope in position from Stecum, Soil Nos. S57Colo-8-5.

	TYPE Tabernash	LOCATION	Grand_County. Colorado	
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Soil Type: Tabernash loam

Soil Nos.: S55Colo-25-5

Location: Approximately the NE 1/4 of the SE 1/4, Sec. 27, TLS, R76W, Grand County, Colorado, approximately 1.8 mile north and 380 feet west of the Forest Service headquarters building on the road to Fraser.

Physiographic Position: Outwash terrace.

Topography: Gently sloping convex area of about 4 percent gradient facing east.

Drainage: Well drained.

Vegetation: Forest cover of lodgepole pine with thin understory of vaccinium.

Use: Forest land or grazing land.

Collected by: James Allen and A. J. Cline, August, 1955.

Horizon and **Lincoln** Lab. No.

Ao - Aoo 1 to 0 inch. Gray (10YR 5/1 dry) to black (10YR 2/1 moist) thin mat of undecomposed and partially decomposed organic materials. The surface one-fourth inch consists almost entirely of last year's fall of pine needles; the horizon rests abruptly on the horizon below.

0 to 12 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) loam; soft A1 2886 when dry, very friable when moist; weak to moderate medium and coarse crumb structure; slightly acid; the color of this horizon is not uniform and contains streaks and mottles of 10YR 2/1 and 10YR 4/2 materials; lower boundary clear and smooth.

 $1\frac{1}{2}$  to  $5\frac{1}{2}$  inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) loam; soft when dry, very friable when moist; weak coarse platy structure breaking to weak to moderate coarse and medium crumb; 2887 approximately neutral in reaction; lower boundary gradual and wavy.

 $5\frac{1}{2}$  to 8 inches. Pale brown (10YR 6/3 dry) to dark brown (10YR 4/3 moist) clay loam; slightly hard when dry, friable when moist; weak to moderate fine subangular blocky structure; approximately neutral in reaction; this horizon has thin nearly continuous tonhautchen; the surfaces of the soil aggregates 2888 are coated with 10YR 7/2 colored materials probably from the horizon above; lower boundary clear and

8 to 15 inches. Hight brown (7.5YR 6/4 dry) to dark brown (7.5YR 4/4 moist) heavy clay loam or light 121 clay; very hard when dry, firm when moist; moderate to strong fine subangular blocky structure; approximately neutral in reaction; moderate continuous tonhautchen; the surfaces of the soil aggregates 2889 are thinly coated with 10YR 7/2 colored materials; lower boundary clear and smooth.

B22 15 to 23 inches. Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) heavy clay loam or light clay; 2890 very hard when dry, firm when moist; moderate coarse prismatic structure breaking to strong medium angular blocks; approximately neutral in reaction; strong continuous tonhautchen; the surfaces of the soil aggregates are coated with 10YR 7/2 colored materials principally on vertical faces; lower boundary gradual and smooth.

23 to 27 inches. Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) gravelly clay loam in texture; hard when dry, friable when moist; weak coarse and medium subangular blocky structure; approximately B3 2891 neutral in reaction; this horizon contains thin patchy tonhautchen; about 30 percent of this horizon is cobble and gravel; lower boundary gradual and smooth.

27 to 36 inches. Fale brown (10YR 6/3 dry) to dark brown (10YR 4/3 moist) cobbly sandy loam; hard when dry, firm when moist; massive; about 70 percent of this horizon is cobble and gravel but the 2892 horizon appears to be weakly cemented.

SOIL SURVEY LABORATORY Lincoln, Nebr. 3/17/58

SOIL TYPE Tabernash LOCATION Grand County, Colorado loam

SOIL NOS. S55Colo-25-6 LAB. NOS. 2893-2898

IRLA PARTICLE SIZE DISTRIBUTION (in man.) (per cent) 3A1 2A2 DEPTH INCHES HORIZON COARSE COARSE MEDIUM FINE SAND SAND VERY FINE SAND TEXTURAL CLASS SILT CLAY 0.05.0.002 < 0.002 0.2-0.02 0.02-0.002 0.5-0.25 0.25-0.10 0.10-0.65 45.3 12.4 27.0 23.6 8 39.1 27.8 32.8 20.2 4 34.2 36.1 30.3 18.2 2 35.3 34.5 31.7 18.2 1 32.9 32.5 30.8 16.8 2 2.8 | 5.3 2.3 16.9 15.0 A2 0-7 7.8 8.3 5.4 9.3 3.9 c1 6.7 7-12 Bl. 18.2 2 18.2 1 16.8 2 4.0 4.5 9.3 cl 12-22 B21 3.6 cl. 4.0 8.6 9.4 4.5 22-32 B22 3.7 çl 32-38 B3 38-48+ C 5.0 6.1 4.8 9.4 9.3 8.4 8.3 30.5 30.5 28.1 15.5 4 cl 4.6 10.1 7.6 ORGANIC MATTER MOISTURE TENSIONS PH 8Cla SCLa. 482 6Ala 6Bla Iron 1/10 ORGANIC MITRO-1/3 15 **₽**⇔ ∩

Soil Type: Tabernash loam

Soil Nos.: S55Colo-25-6

Location: Approximately the SW 1/4 of the NE 1/4, Sec. 34, TIS, R76W, Grand County, Colorado. About 1.1 miles north and 190 feet west of the Forest Service headquarters building on the road to Fraser.

Physiographic Position: Outwash terrace.

Topography: Cently sloping convex area of approximately 4 percent gradient facing east.

Drainage: Well drained.

Vegetation: Principally lodgepole pine with a thin understory of vaccinium and grasses.

Use: Timberland and limited grazing.

Collected by: James Allen and A. J. Cline, August 1955.

Horizon and Lincoln Lab. No.

1 to 0 inch. Gray (10YR 5/1 dry) to very dark gray (10YR 3/1 moist) partially decomposed organic material; the horizon rests abruptly on the horizon below. Aο

0 to 7 inches. Light gray (10YR 7/2 dry) to grayish brown (10YR 5/2 moist) loam; soft when dry, very 2893 friable when moist; weak coarse and medium platy structure breaking to weak to moderate fine crumb; approximately neutral; lower boundary gradual and wayy.

7 to 12 inches. Pale brown (10YR 6/3 dry) to dark brown (10YR 4/3 moist) clay loam; slightly hard when 2894 dry, friable when moist; moderate fine angular and subangular blocky structure; approximately neutral in reaction; thin continuous tonhautchen; the surfaces of the soil aggregates of this horizon have a strong coating of 10YR 7/2 materials; lower boundary gradual and wavy.

12 to 22 inches. Light brown (7.5YR 6/4 dry) to brown (7.5YR 5/4 moist) silty clay; extremely hard R21 2895 when dry, very firm when moist; weak to moderate very coarse prismatic structure breaking to strong medium angular blocks; approximately neutral in reaction; thick continuous tonhautchen; the faces of the soil aggregates of this horizon have a moderate coating of 10YR 7/2 materials; lower boundary gradual and smooth.

22 to 32 inches. Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) silty clay; extremely hard P22 2896 when dry, very firm when moist; weak to moderate very coarse prismatic breaking to moderate to strong coarse and medium angular blocks; approximately neutral in reaction; thick continuous tonhautchen; the surfaces of the soil aggregates of this horizon have a thin coating of 10YR 7/2 colored materials and some dark organic staining; lower boundary gradual and smooth.

32 to 38 inches. Brown (7.5YR 5/4 dry) to dark brown (7.5YR 4/4 moist) sandy clay; hard when dry, B3 2897 friable when moist; weak coarse subangular blocky structure; approximately neutral in reaction; thin nearly continuous tonhautchen; the surfaces of the soil aggregates in this horizon have a very thin indistinct coating of 10YR 7/2 materials; lower boundary gradual and smooth.

38 to 48 inches plus. Yellowish brown (10YR 5/4 dry) to dark yellowish brown (10YR 4/4 moist) gravelly sandy clay loam; hard when dry, friable when moist; massive; approximately neutral in reaction; 2898 this horizon grades into waterwashed cobble and gravel strata.

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SOIL	SURVEY	LABORATORY	Lincoln, Nebr.	June 1961

SOIL TYPE *Tex LOCATION Gunnison County, Colorado sandy loam

SOIL NOS. S59Colo-26-3 LAB. NOS. 11998-12003

		1B1	8		CLE SIZ		UTION (in			<u>341</u>	040	
EPTH NCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURA CLASS
į		2-1	1-0.5		0.25-0.10		0.05-0.002	< 0.002	0.2-0.02	Q02-Q7 <b>0</b> 2		1
0-2	77	14.4	17.5		11.8	8.7	27.3	12.7	28.0	14.0	38	cosl.
2-10	AL A2	15.3			15.7	8.4	27.7	6.5	30.6		33	cosl
10-14		16.6			17.3	9.4	22.3	6.8		9.7	41	cosl
14-24		20.9			16.6	8.1	16.2	5.3		8.8	39	lcos
24-45		20.8	19.5		17.6	9.4	16.1	6.1	26.1	8.3	39	lcos
45-58		30.0	24.4		15.9	5.6	8.3	4.2	16.7	4.4	45	cos/lo
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6.0				0.007		1.0				10.2	6.4	2.2
6.3			0.04			0.9		_		10.6	6.7	2.2
6.7			0.02			0.9	İ	< 0.1		7.2	4.6	1.6
							-					
5Ala			TABLE			BASE SAT.	Base	Sum	Sum	423475719 <b>9646</b> 7975	***************************************	
ATION	6 <b>№</b> 2ъ	602b	6Ша	6P2a	602a	<b>%</b>	Sat. %		Į.	Ca/Mg		0. D.
PACITY	Ca	Mg	н	No	K	NEO OAC	on Sum		Cat-			Bulk
H ₄ OAc		millioquiv	i olents per	i 300g. soli	!	5C1.	Cations 5C3	5Bla	ions 5A3a	8D3		Densit
				;			49	8.6	17.4	6.4		<u> </u>
12.5	7.1	1.1		< 0.1		69 71	54	4.2	7.7	0.4	l	1
5.9	3.3 2.2	0.7	,	< 0.1 < 0.1	2	7 <u>1</u> 66	53	2.7	5.1		Ī	i
4.1 3.4	2.0	0.7		< 0.1	•	82	64	2.8	4.4		į	1
3.3	2.1	0.8	:	< 0.1	<u> </u>	91	68	3.0	4.4		j	1
2.5	1.6	0.7	0.9	< 0.1	:	96	73	2.4	3.3	į	į	1
		,					1	1	-	•		1
		İ		1	1	!	1	1	1	i	į	
					Į	į	1		1	Į	1	1
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	İ	į	<u>i</u>	1		•		l	-	į	Ì	1
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	-	l		1				1			1	1
		§	7	i	i	i	1	1	ŧ	i	į	ī
	ļ	İ	1	Į	ŧ	•	Ī	ī	I	ţ	Ì	\$
	ŧ	ŧ	1	ŧ	1	•	ŧ	i	I	<b>\$</b>	1	•

Soil Type: *Tex sandy loam

Date: Sept. 1959, by J. Y. Nishimurs, W. Goddard, J. S. Allen, L. Juve, C.J. Fox Area: Ournison County, Colorado
Location: NEA of Sec. 14, T. 13 S., R. 83 W. Forest Hill road-immediately east of fork in trail, photo 2717.

Parent Material: Glacial moraine dominantly of granitic origin.

Physiographic position: Upland moraine position about 1/3 down slope. Elevation about 9900 feet.

Topography: Hummocky. SW exposure with 32 percent gradient.

Drainage: Well-drained

Vegetation: Lodgepole pine with a 5 percent ground cover of kinnikinick. Mosses and lighens on rocks.

Use: National Forest land. Described by: Charles J. Pox. Soil Ecs.: S-59-Colo-26-3

### Lincoln Horison

Isb. No.

1-1 Loose pine needles; approximate pH 4.8.

۰

0-2

Partially decayed pine needles mixed with some mineral matter. Approximate pH 5.2.

11998 41

Dark grayish brown (10TR 4/2 dry) to very dark grayish inches brown (10YR 3/2 moist) gravelly sandy loam; single grain and weak very fine granular structure; soft when dry, very friable when moist; nonplastic when wet; about 2 percent of horizon consists of rounded glacial stones; approximate pH 5.5; roots plentiful; lower boundary abrupt and smooth.

11999

2-10 Pale brown (10TR 6/3 dry) to dark brown (10TR 4/3 moist) inches gravelly sandy loam; weak very fine granular structure; soft when dry, very friable when moist, nonplastic when wet; a very few hair-line discontinuous bands that are higher in chrome; clean sand grains; approximate pH 5.2; roots plentiful; lower boundary clear and wavy.

12000 A2 & B1 10-14 Pale brown (10YR 6/3 dry) to dark brown (10YR 4/3 moist) inches gravelly loamy sand; weak medium subangular blocky structure breaking to single grains and weak very fine granules; loose when dry or moist, nonplastic when wet; three \( \frac{1}{2} \text{ to } \frac{1}{2} \text{ bands in this horizon that are light brown (7.5)R 6/\( \text{t} \text{ dry} \) to brown (7.5TR 5/h moist); bands are gravelly sandy loam and

4.7

lightly stained; approximate pH 5.0; roots plentiful; lower boundary clear and wavy.

12001 A2 & B2 Li-2i Very pale brown (10TR 7/4 dry) to yellowish brown (10TR 5/4 inches moist) gravelly loamy sand; weak medium subangular blocky structure breaking to single grains and weak very fine gran-ules; soft when dry, very friable when moist, nonplastic when wet; sand grains lightly stained; approximate pH 5.0. Three or four 4 to 2" bands in this horizon that are of gravelly clay loam texture; light brown (7.5%R 6/4 dry) to dark brown (7.51R h/h moist); angular blocky structure breaking to moderate fine granules; hard when dry, very firm when moist, plastic when wet; sand grains stained, approximate pH of bands 6.0. Roots in this horizon plantiful; lower boundary clear and wavy.

12002 B₁

24-45 Very pele brown (10YR 7/4 dry) to yellowish brown (10YR 5/4 inches moist) gravelly loamy sand; single grain structure; loose when dry or moist, nonplestic when wet; sand grains lightly stained; approximate pH 5.0. Five 1 to 1" bands in this horison are light brown (7.51R 6/4 dry) to dark brown (7.5TR 4/4 moist) gravelly clay losm; angular blocky structure breaking to moderate fine granules; hard when dry, very firm when moist, plastic when wet; approximately pH of sands 6.0. Rounded rocks make up 10 percent of the volume of this horizon; roots few; lower boundary gradual and wavy.

12003 C 45-58 inches Light yellowish brown (lOIR 6/4 dry) to yellowish brown (lOIR 5/4 moist) gravelly loamy sand; single grain structure; loose when dry or moist, nonplastic when wet; approximate pH 6.0; few rounded stones; roots none.

Remerks: Samples of horizons below 10" depth were collected excluding the band materials; i.e., samples represent the inter-band materials. Rounded SOIL SURVEY LABORATORY Lincoln, Nebr. June 1961

SOIL TYPE *Tex LOCATION Gunnison County, Colorado

sandy loam

	1	18	ia.	PARTI	CLE SIZ	E DISTRIB	UTION (in	mm.) (þ.	A. ceut)	JAL	2 <b>A</b> 2	
DEPTH INCHES	HORIZON	VERY COARSE SAND 2-1	COARSE SAND 1-0,5	MEDIUM SAND 0.5-0.25	FINE SAND 0. 25-0. 10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	0. 2-0.02	<b>002-000</b> 2	> 2	TEXTURA CLASS
1-4 4-8 8-14 14-19 19-32 32-42	A2 A2&B1 A2&B2 B3C C1 C2	22.3 19.5 12.7 15.5 13.6 14.2	13.1 18.3 18.2 18.5		9.9 11.0 22.1 20.0 21.2 21.3	8.2 10.2 12.7 12.7 12.4 12.0	35.4 33.3 16.8 18.8 18.6 17.4	5.0 6.9 5.7 4.0 3.9 3.2	31.1 34.7 33.2 33.5 32.2 32.0	14.8	49 36 37 38	cosl cosl lcos lcos lcos
8 <b>Cla</b>	pH 1:5			NITRO-		6Cla Free Iron		6Elc CeCO3	***************************************		URE TE 4Ble. 1/3 ATMOS.	NSIONS 4B2 15 ATMOS.

Soil Type: "Tex sendy loam.

Date: Sept. 1959, by W. Goddard, J. S. Allen, L. Juve, C. J. Fox

Area: Ounnison County, Colorado

Location: Swi of Nuly of Sec. 16, T. 13 S., R. 82 W. Southeast corner of photo

2717. North of Pieplant Cow Camp along Pieplant trail.

Parent Material: Granitic glacial moraine

Topography: Very hummocky. Slope gradient 35 percent. Drainage: Well-drained Vegetation: Lodgepole Pine. No understory except kinnikinick sovering about 2 percent of ground surface

Use: National Forest Soil Nos. 8-59-Cole Described by: Charles J. Fox. 8-59-Co10-26-6

Lincoln Borison lab. Bo.

Loose pine needles.

Decomposed bine needles.

Black (10TR 2/1 moist) sandy loss very high in charcoal from past fires; roots plantiful; lower boundary abrupt and amooth.

12016 A₂ 1-4 inches

Pale brown (10TR 6/3 dry) to brown (10TR 5/3 moist) gravelly sandy losm; weak very fine granular structure; soft when dry, very friable when moist, nonplastic when wet; clean sand grains; occasional rounded pebbles stained dark brown (7.5TR h/h dry) on under sides; approximate pH 6.0; roots plantiful; lower boundary clear and wavy.

12017 A&B₁ 4-8
Inches
Inches
(10TR 5/4 moist) when crushed gravelly sandy lous; removes
in week medium subangular blocky aggregates coated very
pale brown (10TR 7/3 dry) and breaks to weak very fine granules; soft when dry, very frieble when moist, nonplastic when wet; both clean and lightly stained sand grains; occasional rounded grantic gravels 2g inches in disseter; approximate pH 6.0; roots plentiful; lower boundary clear and wavy.

12018 A& 2 8-14 inches

light yellowish brown (10TR 6/4 dry) to yellowish brown (10TR 5/4 moist) gravelly losmy sand; weak medium subangular blocky structure breaking to weak very fine granules and single grains; sand grains lightly stained; soft when dry, very friable when moist, nonplastic when wet; approximate

cobbles whose upper surfaces are coated with clean very fine sand grains forming a smooth surface. There are two wavy  $\frac{1}{2}$  - inch bands in this horison that are light brown (7.5%  $\frac{1}{2}$ / $\frac{1}{2}$ ) to dark brown (7.5%  $\frac{1}{2}$ / $\frac{1}{2}$ ) moist heavy clay loam breaking to moderate fine granular structure; extremely hard when dry, very firm when moist; very plastic

when wet; sand grains heavily stained; upper surfaces of bands thinly coated with very clean, very fine sand grains. Roots plentiful in this horizon; lower boundary gradual and wavy.

12019 B₃C 14-19

Variegated brown (7.5MR 5/h dry) to dark brown (7.5MR h/h moist) and yellowish brown (10MR 5/h dry) gravelly leamy sand; crushed colors are pale brown (10MR 5/3 dry) to brown (10MR 5/3 moist); compact in place and resmoves in hard angular fragments with upper surfaces costed with

SOIL	SURVEY	LABORATORY	Lincoln, Nebr.	February	1959

SOIL TYPE Trout Creek LOCATION Chaffee County, Colorado clay loam

SOIL NOS.

S58Colo-8-1

LAB. NOS. 9044-9049

1		. lBla	******				UTION (in					
DEPTH INCHES	10RIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAKO	VERY FINE SAND	SILT	CLAY			2A2 > 1	TEXTUR/ CLASS
1		2-1	1-0.5	0.5-0,25	C. 25-0. 10	0.10-0.05	0.05-0.002	< 0.902	0, 2-0,02	0.02-0.002	(<19 <b>m</b> m	)
0-2	Al	7.7a	4.la	2.la	5.la	6.8a	43.4	30.8	26.3			cl
2-6	AB		3.2a	1.6a	4.3e	_	46.1	34.1	25.8			sicl
6-10	B2t		3.0ъ		3.7c		36.8	46.9	17.6		, ,	С
10-16	B3ca		4.1d		4.7e	_	32.1	46.4	16.3			c
16-22	Bca		5.3f		4.10		42.4	32.6	14.3		49	cl
22-25-	Cr	13.7f	8.1 <b>f</b>	3.3f	6.0g	6.2g	38.2	24.5	18.7	29.1	58	1
e) 94981749884783 > / Heis		(81174106/±0077340			gadora stranski dosekto			6Ela		17.231190.11.1111		1117) 61-11-11-11-11-11-11-11-11-11-11-11-11-1
	-PH			INIC MA	I LER	6Cla		OFTE		MUIS	TURE TE	
3Cla			6Ala	6Bla		Free		CaCB ₃		1/14	1/2	4B2
1	1:5	1:16	organic Carbon	MITRO-	C/N	Iron		equive		ATMOS.	1/3 AT MOS.	ATMOS
1:1			94	•		Iron Fe ₂ 03		隽		55	96	92.
7.6			4.04	0.235		2.8		ã				13.4
7.6			2.22			3.1		ā				13.2
7.7	į		1.52	0.093		3.4		Q				16.9
7.9			1.86			2.8		11			i	16.0
8.0			1.20	0.110		2.2		29				12.6
8.2			0.52	0.065		2.2		32				9.2
								·				
5Ala	######################################	EXTRAC		CATIONS		BASE	5C3	5 <b>B</b> la	5 <b>A3a</b>	803		
CATION	6N2b	602ъ	6Ш.а	6P2a	692a	SAT.	Base	Sum	Sum	Ca/Mg		
APACITY	Co.	46-	H	No	ĸ	NEW AC		Bases	Cation	6		
APACITY NH _L AC			-				on Sum	,				
		MIN (E) BOOK	soms per	IVUg, sati	·	, 5C1	cations.	me/	100g.			
28.5	į	2.1	1.6	<0.1	2.4						į	
27.8	27.6	1.7	2.4	<0.1	1.2	110	93		32.9		İ	
30.9	30.4	2.7	2.5		1.1	111	93	34.2	36.7	11.2		
25.7		2.9	<0.1	•	0.8		l		į	1	Ì	Ì
17.8		2.0	-01-		0.4		l		•		ļ	l
12.9		1.8	<0.1	<0.1	0.3			ĺ	į		İ	į
1						,, . \		į		i	İ	İ
a. Fen	w smo	oth da	rk bro	wn con	cr. (F	e-Mn?)	/== **	L.	İ		İ	
							(Fe-Mn		ļ	•	1	į
							(Fe-Mn?			~~~		l
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							(Fe-Mn?)					
- 1							(Fe-Mn?					
g. Fer	w вдоо	on TIE	Tr pro	MII ÇÖ	DINCK	COUCT.	(Fe-Mn?)	, wrec'	COMMO	1 0400	P	•
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i			•	<b>}</b>	1	•	1	•	•	3	ì	

Soil Type: Trout Creek clay loam Described by: A. J. Cline Location: The SW4 of Sec. 21, T13S, R77W. Chaffee County, Colorado.

Date of Sampling: September 1957. (Aerial photograph 2-105).

Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline. Physiographic Position: Side slope of high mountain valley at elevation of approximately 9,220 feet.

Topography: Moderately steep convex slope facing east.

Drainage: Well drained.

Vegetation: Scattered growth of spruce, poplar, and some Ponderosa pine with thick understory of grasses and sedges. Use: National Forest Service land.

Soil Nos.: 858Colo-8-1

Lincoln Rorizon

Lab. No.

Brown (7.5YR 1/2 dry) to very dark grav (7.5YR 3/1 moist) <u> 9044 - </u>

fine granular structure; noncalcareous; lower boundary clear and smooth.

9045 AB 2-6 inches

A partially mixed horizon with colors strongly variegated. Includes colors of (2.5YR 5/3 dry) (5YR 5/3 dry) (7.5YR 5/4 dry) and (10YR h/2 dry) with moist colors of (10YR h/3) (5YR 2/2) (7.5YR 3/4) 10YR 3/2. The crushed colors average approximately 5YR 3/3 moist; clay loam; slightly hard when dry, very friable when moist; strong; very fine granular structure; noncal careous; approximately 5 percent of this horizon is channery and gravel; lower boundary clear and smooth.

SOIL SURVEY LABORATORY Lincoln, Nebr. February 1959

SOIL TYPE Trout Creek LOCATION Chaffee County, Colorado loam

SOIL NOS.

8580010-8-11___ LAB. NOS. 9091-9094

	i	. 1BL	3.	PARTI	CLE SIZ	E DISTRIE	UTION (in	non-1 (pe	s centl	3A1.		1
DEPTH INCHES		VERY				VERY	***************************************				2A2	TEXTURA
NCHES	HORIZON	SAND	COARSE SAND	SAND	SAND	SAND	SILT	CLAY			> 2	CLASS
		2-1	1-0.5	0.5-0.25	0. 25-0. 10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	<b>0</b> 03-00 <b>0</b> 2	(<1.9mm	<b>.</b>
0-3	Al.	4.6a					46.2	29.6		<b>31.</b> 8	6	cl
3-6	AB	2.la					53.0	32.0	23.6	37.0	11	sicl
6-12 12-20	182t 183	1.7a 0.4a					50.1 27.4	35.3 67.9	20.3 5.8	36.7 23.9	10 4	sicl c
-E-	נט	0.44	0.04	U.Ua	±•~a.	1.76	E ( • 4	01.9	<b>J.</b> 0	<b>~</b> 3•9	4	G
hi ffeff i bhea a far (4 f ?	mmanum H	antestaketikereen		MIC MA	TTER	Free	**************************************	6Ela	<b>839(48848</b> 8)1:2-çi	MOIST	URE TE	
Cla			6A1a	6Bla		Iron						4 <b>B</b> 2
-	1:5		CRGANIC CARBON	NITRO-	C/N	%Fe ₂ 03		CoCO3 equiv- alent	•	1/10 ATMC3.	1/3 ATMOS.	15 ATMOS
1:1			. %	鬼		6Cla		%		%	%	*
7.2			4.57	0.276	17	4.4		ď				13.4
7.4				0.183 0.116		4.5		44				12.8
7.4 7.2				0.110		4•7 4•4		d				12.7 19.3
Ala	F148:451*********	EXTRAC	TABLE	CATIONS	581a	amanaman BASE	503	Sun	Sun	Ca/Mg	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	***************************************
CATION	6 <b>ж</b> 2ъ	602ъ	6ELa		692a	SAT.	Base		Cation		,	
KCHANGE APACITY NELLAC	Co	Mg	н	No	K	NH4AC EXCH.	Set. % on Sum	5 <b>Bla</b>	5 <b>A3</b> a	_		
		******	alents per		,		Cations			813		
29.2	25.8	4.0	4.1	<0.1	2.4	110	89	32.2		6.4		
28.0 25.3	26.4 21.6	4.3 4.3	3.7 4.5	<0.1 0.1	0.7 0.5	112 105	89 85	31.4 26.5	35.1 31.0	6.1 5.0		
36.4	30.6	6.2	4.6	0.1	0.6	103	89	37.5	42.1	4.9		
						-	-					
a. ¢	ommon	irre	ular 1	rown o	oner.	(Fe?)	Also. Pe	w smc	oth h	ack co	ner-	(Mo?)
						/						/

Soil Type: Trout Creek loam. Described by: A. J. Cline Location: NWA of Sec. 21, Thas, R77 V, Chaffee County, Colorado.

Date of Sampling: September 1957

Collectors: J. Retzer, E. M. Payne, R. Dansdill, A. J. Cline.

Physiographic Position: Nountain slope at an elevation of approximately 9,400 feat. Topography: Moderately steeply sloping but slightly concave area of approximately 12 percent gradient facing east. Drainage: Well drained. Vegetation: Ring muhly, mountain fescue, June grass, mountain broom grass.

Use: National Forest Service lands.

Soil Nos.: S58Colo-8-11

### Lincoln Horizon

Lab. No.

9091 0-3 inches Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) loam; soft when dry, very friable when moist; moderate to strong fine granular structure; noncalcareous; this horizon has a color of 7.5YR 3/2 when crushed; lower boundary clear and smooth.

9092 AΒ 3-6 inches

Brown (7.5YR 5/3 dry) to brown or dark brown (7.5YR L/3 moist) loam; slightly hard when dry, very friable when moist; strong very fine subangular blocky structure; noncalcareous; there are thin patchy clay skins on both the horizontal and vertical faces of the soil agaragates; lower boundary clear and smooth.

Brown or reddish brown (6.75YE 5/4 dry) to reddish brown 9093 6-12

> friable when moist; strong fine subangular blocky structure noncalcareous; there are thin continuous clay skins on the surfaces of the soil aggregates; lower boundary abrupt and

9094 В 12-20 inches wavy.

Dark gray (2.5Y 4/1 dry) to very dark gray (2.5Y 3/1 moist) clay; very hard when dry, firm when moist; moderate medium prismatic structure breaking to moderate to strong medium angular blocks; noncalcareous; lower boundary gradual and wavy. There is some partially weathered shale chips in this horizon.

	SOIL	SURVE	Y LABORA	TORY M	ncoln, Neb		0	ctober	1963
	SOIL	TYPE	Truckton coarse sandy	LOC	ATION.	Elbert (	County, Col	orado	
	so	OIL NOS.	<b>8</b> 61 <b>C</b> oJo-20	-1	LAB.	NOS. 16	6628-16634	. ėrūsyrėrmympu maga <i>n dėdijo</i> rėdė	ghir y nightyn ar day mag van
<u>} 1</u>	PEPTH INCHES	HORIZON COA	RY RSE COARSE MEDIU ND SAND SAND	TICLE SIZE DIS	STRIBUTION ( RY NE ND SILT	in mm.) (par c	ant) 3A1	2A2 TEX	TURAL ASS
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Soil Type: Truckton coarse sandy loam

Date Sampled: May 1961 Collectors: A. J. Cline and R. C. Accola

Area: Elbert County, Colorado

Location: 415 feet north and 425 feet east of the southwest corner of Sec. 2,

T6S, R63W

Physiographic Position: Upland slope of approximately 5 percent facing southwest.

Drainage: Well drained

Vegetation: Yucca and blue grama grass

Use: Pasture land

Soil Nos.: S61-Colo-20-1

Described by: A. J. Cline.

Lincoln Lab. No. and Horizon

16628	All	0-2 inches	Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) coarse sandy loam; soft when dry, very friable when moist; weak fine platy structure breaking to moderate very fine granules; noncalcareous; lower
16629	A12	2-9 inches	boundary clear and smooth.  Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) coarse sandy loam; hard when dry, very

inches (10YR 3/2 moist) coarse sandy loam; hard when dry, very friable when moist; weak coarse and very coarse subangular blocky structure breaking to moderate fine granules; noncalcareous; lower boundary clear and smooth.

16630 B2lt 9-13 Brown (10YR 5/3 dry) to dark brown (10YR 3/3 moist)
inches coarse sandy loam; very hard when dry, very friable when
moist; weak coarse prismatic structure breaking to moderate
medium subangular blocks; noncalcareous; there are a few
thin patchy clay films on the surfaces of the soil

sand grains: lower boundary clear and smooth.

16631 <u>B22</u>t Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3 13-19 inches moist) heavy coarse sandy loam; extremely hard when dry, friable when moist; moderate coarse prismatic structure breaking to moderate medium subangular blocks; noncalcareous; there are thin nearly continuous clay films on the surfaces of the soil aggregates and coatings and bridgings between sand grains; lower boundary clear and smooth. 16632 **B3** 19-25 Light yellowish brown (10YR 6/4 dry) to yellowish brown

inches (10YR 5/4 moist) coarse loamv sand: extremely hard when

dry, friable when moist; very weak coarse prismatic structure breaking to weak medium subangular blocks; noncalcareous; there are a few thin patchy clay films and some coating and bridging between sand grains; lower boundary clear and smooth.

16633 & C 25-60 + Light yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) coarse sand; hard when dry, very friable when moist; massive; noncalcareous; lower boundary clear and smooth.

	****************	iBla		PARTI	CLE SIZ	E DISTRIB	UTION (in	тап.) <b>(р</b> е	31. CC'11) 	3AT.	*****************	: :
DEPTH INCHES	HORIZON	SWND	COARSE SAND	MEDIUM SAND	SAND	VERY FINE \$AND	SILT	CLAY			2A2 > 2	TEXTURAL CLASS
		2.1	1-0.5	0.5-0.25	0. 35-0. 10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.92	0.02-0.002		
0-5	All.	1.3	5.9	9.2	45.4		12.9	6.3	56.2		Tr.	
5-11	AJ2	3.1	6.8	9.4	45.5			8.4	52.3		Tr.	
11-15	AB	1.5	8.6	11.9	45.6			14.7	40.2		Tr.	
15-20		0.9	5.8	10.7	47.7			15.9	43.2		Tr.	į
20-26		0.6	4.5	9.6	45.1		9,8	17.0	44.8		Tr.	
26-32 32-38		0.3	3.4	8.4	47.8 62.9			15.0 8.1	50.9		Tr.	
38-60		0.3	2.9 3.6	10.3 15.6	52.1		1.4	7.1	50.6 41.9		Tr.	
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SATU- PATED			ORGANIC				30	Cm.	A. D.	1/10	1/3	15
PASTE	1:1	1:10	CARBON	GEN	C/N		4B3	4Alc		ATMC3. Sieyed	ATMCS.	ATMOS. Sieved
	-8Cla		%	9%			% W.	g/cc	g/ce.	ore ved	200	7
į	6.0		0.76	0.064	12		17.0	1.59	1.62			2.9
	6.6		0.46	0.049			11.0	//	1,02			
	6.7			0.051								3.3 6.3
	6.9		0.39	0.043			16.3	1.67	1.74			6.5
	7.0		0.32	0.038					1.78			6.8
	7.0		0.19									6.0
į	7.1		0.07									3.2
l	7.2		0.05									2.4

Soil Type: Truckton loamy sand

Soil Nos.: 959Colo-44-7

Field classification: Chestnut-Brown Intergrade

Location: 360 feet west, 235 feet south of northeast corner, Sec. 34, TlN, R59W, Morgan County, Colorado. Photo: YE-4F-166.

Climate: Continental, average annual precipitation 13-15 inches. Elevation 4,700 feet. Frost-free season 146 days.

Mean annual temperature 48° F.

Vegetation: Grama, sandreed, sand bluestem, sand sage. Parent material: Arkosic aeolian sands.

Relief: Gently sloping, 1 to 2 percent slope. Physiographic position: Upland.

Drainage: External slow, Internal rapid.
Moisture: Moist to 40 inches at time of sampling. Stoniness: Water table: None encountered. Salt or alkali: None observed. Erosion: Slight wind.

Described by: Clayton F. Spears, May 6, 1959.

Horizon and Lincoln Iab. No.

0 to 5 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist, 10YR 3/2.5 crushed) loamy sand; weak medium crumb breaking to weak fine crumb structure; soft when dry, very friable moist; noncalcareous; lower boundary clear and smooth. A11 10872

5 to 11 inches. Brown (10YR 5/2.5 dry) to dark brown (10YR 3/2.5 moist and crushed) loamy sand; very weak coarse subangular blocky structure, breaking to weak medium crumbs; soft when dry, very friable when moist; noncalcareous; lower boundary clear and smooth. A12 10873

11 to 15 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3/3 moist and crushed) light sandy loam; weak coarse subangular blocky structure; slightly hard when dry, friable when moist; very thin patchy clay skins on vertical faces of soil aggregates; noncalcareous; lower boundary clear and smooth. 10874

15 to 20 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3/3 moist, 10YR 3.5/3 crushed) sandy loam; B21t 10875 weak coarse prismatic structure breaking to weak coarse subangular blocks; hard when dry, friable when moist; thin patchy clay skins on both vertical and horizontal faces of soil aggregates; noncalcareous; lower boundary clear and smooth.

20 to 26 inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3.5/3 moist, 10YR 4/3 crushed) sandy loam; B22t 10876 weak to moderate coarse prismatic structure breaking to weak to moderate coarse subangular blocks; very hard when dry, friable when moist; thin nearly continuous clay skins on both vertical and horizontal faces of soil aggregates; noncalcareous; lower boundary clear and wavy.

B3 10877 26 to 32 inches. Light yellowish brown (1.25Y 5.5/3 dry) to olive brown (1.25Y 4/3 moist, 1.25Y 4.5/3 crushed) heavy loamy sand; weak coarse subangular blocky structure; hard when dry, friable when moist; very thin patchy clay skins in root channels; noncalcareous; lower boundary clear and wavy.

32 to 38 inches. Hight clive brown (2.5Y 5.5/4 dry) to clive brown (2.5Y 4.5/4 moist and crushed) sand; C1 10878 massive; slightly hard when dry, friable when moist; noncalcareous; lower boundary clear and smooth.

38 to 79 inches. 38 to 60 inches sampled. Light yellowish brown (2.5Y 6/3 dry) to light olive brown 22 10879 (2.5Y 5/4 moist and crushed) fine sand and sand; massive; slightly hard when dry, friable when moist; noncalcareous; lower boundary diffuse and smooth.

79 to 94 inches. Hight yellowish brown (2.5Y 6/4 dry) to light olive brown (2.5Y 5/4 moist) loamy sand; C3 massive; soft when dry, friable when moist; noncalcareous; lower boundary diffuse and smooth.

Λħ. 94 to 108 inches. light yellowish brown (2.5Y 6/4 dry) to olive brown (2.5Y 4.5/4 moist) noncalcareous

Remarks: Associated soil Truckton loamy sand, 5 to 9 percent slopes.

Bureau of Public Road Samples: Al2, 5-11 inches; E22, 20-26 inches; C2, 38-60 inches.

DEPTH VERY VERY 2A2 DEPTH	SOIL NOS. S59Colo-44-8 LAB. NOS. 10880-10886  PARTICLE SIZE DISTRIBUTION (in mm.) (per com) 3A1 2A2 TENTURAL			LABORATORY_			
DEPTH VERY PARTICLE SIZE DISTRIBUTION (in mm.). (per cent). 3A1 2A2 TENTUM  L J JI	TRIA PARTICLE SIZE DISTRIBUTION (in mm.) (or conf) 341  VERY VERY ZAZ TENTURAL						
DEPTH VERY VERY 2A2 DEPTIME	PTH VERY VERY 2A2 DENTURAL						
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Soil Type: Truckton loamy sand

Soil Nos.: 8590010-44-8

Field classification: Chestnut-Brown Intergrade.

Location: 800 feet north, 800 feet east of the south quarter corner, Sec. 3, TLN, R59W, Morgan County, Colorado.

Photo: YE-4F-162.

Climate: Continental average annual precipitation 13-15 inches. Elevation 4,750 feet. Frost-free season 146 days. Mean annual temperature 48° F.

Vegetation: Rive grams, sand bluestem, sand reed, sand mage.

Parent material: Arkosic seolian sands.

Physiographic position: Upland.

Relief: Gently sloping 1-2 percent. Aspect. Southwest-faming.

Brainage: Slow external, rapid internal.
Moisture: Moist to 40 inches at time of sampling.

Water table: None. Stoniness: Mone.

Salt or alkali: None observed.

Til

Brosion: Slight.

Horizon and Iine oln Lab. No.

O to 7 inches. Grayish brown (10YR 4.5/2 dry) to very dark grayish brown (10YR 3/2 moist and crushed) A11 10880 lossy sand; weak medium crumb structure breaking to weak fine crumbs; soft when dry, very friable moist;

noncalcareous; lower boundary clear and smooth.

7 to 17 inches. Grayish brown to dark grayish brown (10YR 4.5/2 dry) to dark brown (10YR 3/2.5 moist) A12 10881 (LOTE 3.5/2 crushed) lossy sand; weak medium crumb structure breaking to weak fine crumbs; soft when

SOII TYPE Vascuez

SOIL NOS. S55Colo-10-2

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I OCATION Clear Creek County Coloredo

LAB. NOS. 2909-2913

PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent) DEPTH INCHES HORIZON COARSE COARSE MEDIUM FINE SAND SAND SAND 2A2 TEXTURAL CLASS SILT CLAY ! > 2 2-1 1-0.5 0.5-0.25 0.25 0.10 0.10-0.05 0.05-0.002 < 0.002 0.2-0.02 0.2-0002 (<19 10.6 8.0 3.8 23.0 14.0 5.7 36.4 14.4 4.6 31.6 18.2 25.4 0-1½ All 5.2 3.0 37.8 cl 19.0 17.7 16.8 11 16.3 14.6 10.9 18 A1.2 7.9 4.1 1=4 26.3 cosl 4.-11 А3 6.1 3.7 18.5 18 cosl 13.6 26.6 12.0 11-21 (C1 19.0 15.1 7.9 13.6 9.9 20.9 cosl 24.9 17.6 7.2 11.2 8.8 23.5 8.9 21.4 13.2 19 21-31+ 02 cosl ORGANIC MATTER ρΗ MOISTURE TENSIONS 6Ala 6Bla 8Cla 8Cla Iron MB5 CRGANIC NITRO-CARBON GEN 1/10 Fe₂O₃ 1:5 1:10 C/N ATMOS. ATMOS. ATMOS. 1:1 15.8 .971 16 5.94 .365 16 3.02 .238 13 37.6 4.8 16 4.6 16 2.0 15.7 4.8 11.5 2.2 6.4 0.50 .050 11 2.4 4.9 0.20 .015 1.8 3.0 5.5 5Äla EXTRACTABLE CATIONS SELE Base 5Bla 5A3a 8D3 SAT. 602b 6Hls 6P2a 6Q2s NHJAC Sat. % Sum Sum Bases Cations Ca/Mg

Soil Type: Vasquez loam Soil Nos.: S55Colo-10-2

Incation: The SW 1/4 of the NW 1/4, Sec. 22, T3S, R76W, Clear Greek County, Colorado, on the Jones Pass road

about 1/2 mile above timberline.

Physiographic Position: Cirque basin.

Topography: Concave moderately steeply sloping area.

Drainage: Imperfect to poorly drained; water table fluctuating and moving.

Vegetation: Grasses, willows, tufted hairgrass.

Use: Grazing land.

Collected by: A. Aandahl, J. Retzer, H. Bindschadler, and E. M. Payne, August, 1955.

Horizon and Lincoln Lab. No.

0 to  $1\frac{1}{2}$  inches. Dark gray (10YR 4/1 dry) to very dark brown (10YR 2/2 moist) loam; soft when dry, very A11 2909 friable when moist; weak to moderate coarse granular structure; extremely acid in reaction; lower boundary clear and smooth.

 $1\frac{1}{2}$  to 4 inches. Gray (10YR 5/1 dry) to very dark grayish brown (10YR 3/2 moist) stony loam; soft when dry, very friable when moist; weak coarse granular structure; extremely acid in reaction; lower boundary A12 2910 clear and smooth.

4 to 11 inches. Grayish brown (10YR 5/2 dry) to dark brown (10YR 3/3 moist) stony sandy loam; slightly A3 hard when dry, friable when moist; weak fine and medium subangular blocky structure breaking to weak coarse granules; extremely acid in reaction; approximately 15 percent of this horizon is stone; lower 2911 boundary abrupt but wavy.

11 to 21 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) cobbly sandy clay loam; slightly hard when dry, friable when moist; massive; extremely acid in reaction; a few medium-sized distinct 10YR 5/6 mottles; approximately 20 percent of this horizon is stone; lower boundary gradual 2912 and smooth.

21 to 31 inches plus. Very pale brown (10YR 7/4 dry) to light yellowish brown (10YR 6/4 moist) very fine sandy loam stratified with lenses of coarse sand; slightly hard when dry, very friable when moist; 2913 massive; extremely acid in reaction; horizon contains a few medium-sized distinct 10YR 5/4 mottles; approximately 50 percent of this horizon is rock and stone; ground water at the time of sampling occurred at 24 inches.

	SOIL SURVE	Y LABORATOR	Y Lincoln,	Nebr.	6/26/58	11141. 124W 12. II. 4114.
	SOIL TYPE	Vasquez gravelly loam	LOCATION	Grand Cou	inty, Colorado	. 45.45.15.44.46.46.5
	SOIL NOS.	) ₂ ,				
	1 1 1 1 1 1 1 1	1Bla PARTICLE-S	IZE DISTRIBUTION	in min.) (per e	••••••••••••••••••••••••••••••••••••••	dağ sansasi bo oso- niştir 1800'de
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Soil Type: Vasquez gravelly loam Location: SW 1/4 of Sec. 26, T2S, R76W, Grand County, Colorado. Alpine meadow, East St. Louis Alpine Area.

Physiographic Position: Alpine basin.

Topography: Concave Alpine basin receiving drainage from higher lying Alpine areas.

Drainage: Poorly drained.

Vegetation: Tufted hairgrass, willows.

Use: National Forest Service lands.

Collected and Described by: John L. Retzer, September 6, 1952.

Horizon and Lincoln Iab. No.

0 to 9 inches. Dark gray (10YR 4/1 dry) to black (10YR 2/1 moist) gravelly loam; soft when dry, very All 2806 friable when moist; strong fine granular structure; strongly acid, approximate pH 5.1; lower boundary clear and smooth.

9 to 23 inches. Brown (10YR 5/3 dry) to dark brown (10YR 3/3 moist) gravelly loam; slightly hard when A12 dry, very friable when moist; moderate fine subangular blocky structure breaking to moderate fine 2807 granules; extremely acid, approximate pH 4.3; lower boundary clear and smooth.

23 to 43 inches. Light yellowish brown (2.5Y 6/3 dry) to olive brown (2.5Y 4/3 moist) gravelly sandy C1 loam; slightly hard when dry, very friable when moist; massive or very weak subangular blocky structure; extremely acid, approximate pH 4.5; lower boundary clear and smooth. 2808

C2 43 to 48 inches. Light yellowish brown (2.5Y 6/4 dry) to light olive brown (2.5Y 5/4 moist) gravelly loamy sand; loose when dry or moist; single grained; very strongly soid, approximate pH 4.9; this horizon has many large prominent 10YR 5/6 mottles and bands making up approximately 50 percent of the 2809 ground mass; the soil temperature of this horizon on date of sampling was 37 degrees F., and it is thought that it represents the horizon of alternate freezing and thawing; lower boundary clear and smooth.

Pale olive (5Y 6/4 dry) to olive (5Y 5/4 moist) gravelly sandy loam; slightly hard 48 to 84 inches. Cg 2810 when dry, very friable when moist; massive; very strongly acid, approximate pH 4.7; the horizon has many large prominent 10YR 5/2 and 2.5Y 5/8 mottles; the temperature of this horizon at date of sampling was approximately 32 degrees F., but the soil was not hard frozen on removal; lower boundary gradual

84 to 108 inches. Yellowish brown (10YR 5/4 dry) to dark yellowish brown (10YR 4/4 moist) gravelly 2811 sandy loam; this is a horizon of partially weathered schist rock with a gravelly sandy loam material between the individual rocks. Temperature of this horizon at the date of sampling was approximately 32 degrees F.

COM TYPE Works

I A C A CICARI Rent Country Coloredo

## sandy loam

SOIL NOS.

8610010-6-1 LAB. NOS. 16639-16645

****************	****************	1Bla		PARTI	CLE SIZ	E DISTRIE	UTION (in	mm.) (pe	moramoro er cerat)	****3'A <b>T</b> :****	######################################	**************************************
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURAL CLASS
		2-1	1-0.5	0.5-0.25	0, 25-0, 10		0.05-0.002	< 0.002	0.2-0.02	Q02-Q002		
0-4 4-7 7-15	Al A3 B21t	5.6 4.8 4.5	22.9 24.1 23.1	13.1 21.2 20.9	17.0 20.3 20.9	9.6 8.2 6.7	18.8 14.7 11.0	8.0 6.7 12.9	23.6	4.2 3.7 3.0	Tr. Tr.	
15-19 19-25 25-34 34-50+	B22t B3ca Cca C	3.1 2.7 5.9 7.0	20.7 19.5 23.5 28.3	22.08 20.8s		7.4 7.8a 7.2a 6.6a	11.8 12,3 10.7 8.1	10.6 10.5 11.1 9.1	27.1 28.1 23.5 20.9	2.8 3.3 3.4 2.9	Tr. Tr. Tr.	
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8С1р ХАТО	8Cla	8cla	6Ala	6Bla		6Cla Ext.	, .,		υ <u>ν</u>	Wate 4Blb	r kete 4Bl	ntion 4 <b>B</b> 2
RATED PASTE	1:1		ORGANIC CARBON	KITRO-	c/n	Iron as Fe %	30 4 <b>B</b> 3 % V.	Cm. 4Alc g/cc	A.D. 4Alb g/cc	1/10 ATMOS. Pieçes	1/3 Atwos. Pięces	15 ATMOS. Sigved
7.4 7.5 7.2 7.4 7.4	7.5 7.6 7.6 7.7 8.1	7.4 7.4 7.5	0.30 0.37 0.26	0.065 0.045 0.061 0.046 0.032	8 7 6 6	0.5 0.5 0.6 0.5 0.5	Ť	1.72	1.76 1.72	15.1	10.3	3.8 5.8 4.5 4.2
7.6 7.7	8.3 8.1	8.8	0.18 0.02			0.4 0.4	<b>15.</b> 6	1.72 b	1.83 c	9.1	7.0	4.1 3.0
5Ala		EXTRAC	i	CATIONS		hr 54046427 ** (\$##: 296.9)	8A1a	Sat. Ex	t.Sol.	8A	Carb	onate
ČATION EXCHANGE CAPACITY	c₀ 6№b	602ъ Ма	6Hla. н	6P2a No	692a. к	5A3a Sum	Elec. Cond. EC x 103	8A 6Pla	1 6Qla K	Satur- ation Moist	as C 6Elb <2-mm	6ELc
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6.6 5.0	7.2 4.4	1.0 0.6	- 0.7	Tr. Tr.	0.7 0.5	8.9 6.2	0.73 0.46	0.1	1.3 0.9	20.0 17.9	-	

Soil Type: Vona sandy loam Date Sampled: November 1961

Collectors: A. J. Cline and R. C. Accola

Area: Bent County, Colorado

Location: 190' N &0.15 mile W of the SE Cor of Sec. 3, T21S, R51W

Physiographic position: Upland slope of approximately 4 percent facing southeast.

Drainage: Well drained

Vegetation: Grams grass, yucca, and cactus

inches

Use: Pasture land.

Soil Nos.: S61-Colo-6-1

Described by: A. J. Cline.

Lincoln Lab. No.

and Horizon

16639 Al 0-4

Pale brown (10YR 6/3 dry) to dark grayish brown (10YR 4/2 moist) light sandy loam; soft when dry, very friable

when moist; moderate fine granular structure; noncalcareous;

lower boundary clear and smooth.

16640 A3 4-7

Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3

when moist; weak medium subangular blocky structure breaking to moderate medium granules; noncalcareous; lower boundary clear and smooth.

16641 B21t 7-15

inches

Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3 moist) heavy sandy loam; slightly hard when dry, very friable when moist; weak very coarse prismatic structure breaking to moderate coarse subangular blocks; noncalcareous; there are a few thin patchy clay films on both the horizontal and vertical faces of the soil aggregates and bridges between sand grains; lower boundary gradual and smooth.

16642 B22 t 15-19

inches

Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) sandy loam; slightly hard when dry, very friable when moist; weak very coarse prismatic structure breaking to moderate very coarse subangular blocks; noncalcareous; there are thin patchy clay films on both the horizontal and vertical faces of the soil aggregates and there are clay bridges between sand grains: lower boundary clear and smooth.

SOIL TYPE Vona LOCATION Norgan County, Colorado sandy loam

SOIL NOS.

861Colo-44-1 LAB. NOS. 16646-16651

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DEPTH INCHES	HORIZON	VEDY	COARSE SAND	MUICEM Graz	FINE SAND	VERY FINE SAND	SILT	CLAY		طهمل	2A2 > 2	TEXTURA CLASS
		2-1	1-0.5	0.5-0.25	0. 25-0. 10	C. 10-0.05	0.05-0.002	< 6 CO2	0.2-0.62	<b>0</b> 02-0002		<u>L</u>
0-2 2-4 4-10 10-15 15-31 31-60	Al A3 R2t E3 Coal Coa2	0.3 0.4 0.4 0.4 0.1 0.2	7.9 7.8 6.1 3.3a 3.0a	່ 7.≎d	28.3	24.9 32.0 41.6a		7.9 10.9 18.0 13.0 13.5 10.9	52.9 45.4 56.1 66.5	2.9 2.4 2.0 1.8 2.4 1.7	Tr.	
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SATU-	801.a		6Ala	6Bla						4B1b		
PASTE PASTE	1:1	1:10	ORGANIC CARBON	NITRO- GEN %	Ç/N		30 4183 % W	Cm, 4Alc	A.D. 4Alb g/cc	1/10 ATMOS. Pieces	1/3 ATMOS. Pięcei	15 ATMOS. Sieved
	7.1 6.9		0.57	0.066 0.060	13 11		16.8	1.60ъ	1.645		7.6	3•5 3•9
	6.7 7.3			0.083 0.049	7		23.6	1.44	1.60	22.0	15.5	6.5
	8.0 8.3			0.030	O					19.1	9.4	5.8 5.5 4.2
5Ala			TABLE			(19845)))((1984)))))))	#22+1014980+1+1+664+64*	1	8DL NH _L Ac	44 - <del>688</del> 1 52 8949 <del>1</del> 8 15		onate
CATION ECHANGE CAPACITY NITL OAC	Co	602b Mg milliosuiv	6Hla H	6P28. No 100a. soil	602a. K	5A3a Sum ———————————————————————————————————		Ca/Mg	CEC to Clay Ratio		as_C 6Elb <2-mm.	6ELc
6.7 7.9 14.0 11.1 8.9 7.5	5.2 5.8 10.5 9.9	1.4 1.5 2.9 2.5	0.8 1.0 1.4 0.5	Tr. Tr. Tr. Tr. O.3	0.8 0.8 0.9 0.5 0.5	8.2 9.1 15.7 13.4		3.7 3.9 3.6 4.0	.85 .72 .78 .85 .66	• • • • • • • • • • • • • • • • • • •	- 42	Tr.
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Soil Type: Vona sandy loam

Date Sampled: April 1961 Collectors: A. J. Cline and R. C. Accola

Area: Morgan County, Colorado

Location: 1,700 feet south and 1,000 feet east of the northwest corner of

Sec. 22, T5N, R59W

Physiographic Position: Upland slope of 3 to 4 percent facing southeast

Drainage: Well drained.

Vegetation: Blue grama grass, cactus, and yucca.

Use: Pasture land

Soil Nos.: S61-Colo=44-1 Described by: A. J. Cline.

#### Lincoln Lab. No. and Horizon Light brownish gray (10YR 6/2 dry) to dark grayish brown 16646 Al 0-2 inches (10YR 4/2 moist) loamy sand; soft when dry, very friable when moist; moderate very fine granular structure; noncalcareous; lower boundary abrupt and smooth. Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3 16647 2-4 **A3** moist) fine sandy loam; slightly hard when dry, very inches friable when moist; weak to moderate fine granules; noncalcareous; lower boundary clear and smooth. Brown (10YR 5/3 dry) to brown or dark brown (10YR 4/3 16648 B2t 4-10 moist) heavy fine sandy loam; hard when dry, very friable inches when moist; weak to moderate coarse prismatic structure breaking to moderate medium subangular blocks; noncalcareous; there are many thin patchy clay films on both the horizontal and vertical faces of the soil aggregates and there are gray coatings and bridgings between sand grains; lower boundary clear and smooth. 16649 **B3** 10~15 Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) fine inches sandy loam; slightly hard when dry, very friable when moist: weak coarse prismatic structure breaking to weak to moderate medium subangular blocks; noncalcareous; there are a few thin patchy clay films principally on the vertical faces of the soil aggregates and there is some coating and bridging between sand grains; lower boundary gradual and smooth. Pale brown (slightly lighter than 10YR 6/3 dry) to brown 16650 Ccal 15-31 inches (slightly lighter than lOYR 5/3 moist) light fine sandy loam; soft when dry, very friable when moist; massive or very weak coarse subangular blocky structure; calcareous; this is a weak Ca horizon with some visible calcium carbonate occurring as concretions and as thin seams and streaks; lower boundary gradual and wavy. 16651 Pale brown (10YR 6/3 dry) to brown (10YR 5/3 moist) 31-60 Cca2 inches loamy fine sand; soft when dry, very friable when moist;

but less than in the horizon above.

massive or single grained; calcareous; there is a small amount of accumulated calcium carbonate in this horizon

SOIL | Weld silt loam | SOIL Nos. | S61Colo-3-3 | LOCATION | Arapehoe County, Colorado

SOIL SURVEY LABORATORY Lincoln, Mehraska

LAB. Nos. 15500-15507

Jehrmany 1965

(2-1)	1-0.5    0.5-0.25    (0.25-0.1)   (0.1-0.05)   0.05-0.02    (0.022-0.002)     0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002      0.022-0.002	2   2 - 19   10
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Soil Type: Weld silt loam Soil Nos.: 861Colo-3-3 Classification: Brown.

Climate: Continental, average annual precipitation 14 inches. Mean annual temperature 49° F.

Frost-free period 150 days. Elevation 5,400 feet.

Vegetation: Native pasture. Elue grama, sixweeks fescue, pricklypear, some buffalograss and western wheatgrass.

Parent material: Acolian silty material. Loss.

Physiographic position: Upland.

Relief: Nearly level, 1 to 2 percent slope facing east.

Drainage: Well drained, surface and internal. Intake rate is moderate.

Moisture: Slightly moist to 20 inches. Usually dry.

Stoniness: None. Water table: None.

Salt or alkali: Typical for B3cs to have a pH over 8.5, but no visible salts other than calcium carbonate. Erosion: Slight water erosion. Moderate wind erosion on west and north-facing slopes and crest of ridges. Described by: J. B. Brown, June 27, 1961.

Horizon and Lincoln Isb. Nos.

O to 3 inches. Very dark grayish brown (10YR 3.5/2, moist) silt loam; grayish brown (10YR 5.5/2, dry) 15500 weak medium subangular blocks breaking to moderate fine granules; soft when dry, very friable when moist; many roots; field pH 6.8; clear smooth boundary.

3 to 6 inches. Dark brown (10YR 3.5/3, moist) heavy silt loam; brown (10YR 5/3, dry) weak to moderate medium prisms breaking to weak to moderate subangular blocks; slightly hard when dry, very friable when moist; many roots with thin patchy clay films along channels, and on lower part of ped surfaces; field 15501 pH 6.8; clear smooth boundary.

6 to 12 inches. Bark brown (10YR 3.5/3, moist) silty clay loam; brown (10YR 4.5/3, dry) brown (10YR 4.3, moist and crushed) moderate fine prisms breaking to strong fine and very fine angular blocks; hard when dry, firm when moist; thin nearly continuous clay films on peds; top \$\frac{1}{2}\$ inch of B2 has no macro structure, but the fine and very fine angular blocks are distinctive; many roots and root channels, with roots pede-R2t 15502 trating peds; field pH 7.0; abrupt slightly wavy boundary.

12 to 15 inches. Brown (10TR 5/3, moist) silty clay loam; brown (10TR 5.5/3, dry) moderate fine and medium prisms breaking to strong fine angular and subangular blocks; hard when dry, friable when moist; thin patchy clay film on all peds, with dark stains on ped surfaces; many roots and root channels pene-B2ca 15503 trating peds; violent effervescence, with field pH 8.4; clear smooth boundary.

15 to 22 inches. Light olive brown (1Y 5.5/3, moist) light silty clay loam; light yellowish brown (1Y B31ca 15504 6.5/3, dry) moderate medium prisms breaking to moderate medium angular and subangular blocks; hard when dry, friable when moist; lime concretions are few medium and faint; this horizon contains some roots and many holes less than one millimeter in diameter; thin clay films on vertical ped surfaces; violent effervescence, with field pH of 9.0; gradual smooth boundary.

22 to 32 inches. Light clive brown (1Y 5.5/3, moist) heavy silt loam; light yellowish brown (1Y 6.5/3, 15505 dry) weak to moderate medium prisms breaking to weak to moderate medium subangular blocks; slightly hard SON Weld silt loam

SOIL Nos. 361Colo-3-7 LOCATION Arapahoe County, Colorado

SOIL SURVEY LABORATORY Lincoln, Nebraska

_____LAB. Nos. 15533-15540

February 1965

		1.83	18					Sizi	e class and	narticle di	ameter (mm	) 3A1						
			Total		Υ		Sand		under Eng	_	ilt	, <u> </u>	1	3418	Clay	Chi	erse fragme	ents 2
Depth	Horizon	Sand	Silt	Clay	Very	Coarse	Medium	Fine	Very fine		Int. III	Int. 11 (0.2-0.02	(2-0.1)		Noncer	> 2	2 - 19	Т
(in.)	1	(2-0.05)	(0.05- 0.002)	( < 0.002)	coarse (2-1)	(1-0.5)	Pct. of <	(0.25-0.1)	(0.1-0.05)	0.05-0.02	0.002-			ate	bonate	Pct.	Pct	t. of
0-3	Al	27.1	58.8	14.1	0.2a	0.5a	0.7e	4.0	21.7	40.3	18.5	54.8	5.4		14	Tr.	1	T
3-6	31	21.0	53.2	25.8	0.la	0.2a	0.4	2.9	17.4	35.1	18.1	54.5	3.6	İ	26	Ωv.	1	1
6-12	B2t	14.8	45.4	39.8	0.la	O.la	0.5	1.2	13.2	29.0	16.4	43.1	1.6	-	40		↓	$\perp$
12-21	B3lca	15.3	54.0	30.7	-	-	0.15	1.00			23.0	45.0	1.1	6	25	-		
21-31 31-43	B32ca Clca	14.3	57.6 61.1	28.1 24.4	-	0.1b	0.1b		13.3d 13.2d		24.9	46.7 49.1	1.0	3 2	25	-	İ	1
113-56	CS	18.0	62,0	21.1	-	0.15	0.16		14.7d		25.8	52.6	1.3	1	50		<del> </del> -	┼─-
143-56 56-68	¢3	17.1	63.7	19.2	-	0.15	0.15		15.9d		2ú.8	55.5	1.2	Tr.	1,9	-		_
	(42	(25)						Doub double				ter conte			801			
	6Ala	6 <u>81.</u> 2	İ		6EL;			Bulk densit	4A1b	411	483	ter conte	4B2	<b>{</b>	15-Bex	8сть	pH 8Cla	T 80
Depth	Organic	Nitrogen	C/N		Carbon-	[			Air-	COLE	DJ	1	722		Water	Sat.	COLA	۱~
(in.)	carbon	Į			ate as			30-cm.	Dry	€	30-Cm.	ŀ	15-Bar		to	Paste	1:10	(1:
ì					CaCO 3			F	,		,. 01.11				Clay			ľ
	Pct.	Pct.	<b>!</b>		Pct.	{	g/cc	g/cc	g/cc		Pct.	Pct.	Pct.	}	Ratio		<b>{</b>	1
0-3	1.58	0.124	13		_					•						6.9	7.2	6.6
0-3 3-6	1.13	0.113	13		=			1.30	1.41	0.08	27.1	1	7.3 9.7 16.6	1	0.52 0.38 0.42	6.4	6.8	6.6
6-12	1.10	0.114	10	<del></del>	2	<b>!</b>		-	1.44		<b></b>	<u> </u>		ļ	0.42	7.0	8.0 8.5	8.0
1.2-2 <u>1</u> 21-31	0,72 0,42	0.074	10		1h 11				1.44		]	l	12.9 12.5		0.44	7.7	8.7	8.2
3143	0.24	0.040	,7			1		i	1,39		l		11.9		0.49	7.9	8.9	8.1
43-56	0.17		<del> </del>		9 7 6	<del>                                     </del>		<b>├</b>					11.2		0.53	7.9	9.6	8.2
56-68	0.12		-		ć		<b>.</b>		1-41				10.8		0.56	7.9	8.9	8.3
	- /	Extractab		5B1a		6Hla		Exch.				6Pla	6Qla	saturated	paste 8A	<u>.                                    </u>		BAJ
Depth	6 <b>112</b> b	602b	6P2a	602a		Ext	5A3a Sum	5Al≄	5A2e			OFIA	OATE					1
(In.)	Ca	Mg	Na	ĸ	Sum	Acidity		NH _L OAc	Ne OAc	Ca	Mg	Ne.	K	co3	HCO3	C1	so ₄	Electr condu ity
į				<u>'</u>	meq/100 g	<u>'</u>		!i		,	, ,	meg/1	iter		'			mmhc
0-3	8.6	2.8	Tr.	1.7	13.1	2.3	15.4	13.1	13.5		1	0,2	1.3	1	T :	,		0.2
3-6	12.6	4.0	Tr.	0.9	17.5	3.0	20.5	18.0	18.2 29.6			0.3	0.3					o.
6-12			0.1	1.4				29.2	29.6									0.
12-21			0.3	0.9		ł		20.3	21.6			1.3	0.4					0.6
21-31			1.0	1.1		j :		20.8	21.6 21.6		i	3.4 7.5	0.4		i		l	1.:
31-43		<del>                                     </del>	2.1	1.3			_	21.0	21.4		<del> </del>	13.4	0.5				1	2.0
43-56   56-68		Ī	2.9	1.3		i	1	20.7	21.2		!	18.9	0.5					2.8
			J	-														-
<u></u>	8A Water	5D1 Exchange-	l	6Fla	8D1 NH _L OAc	Base 503	Sat.	a. b.	> 50% 25-509		le matt	er.		<b>L.</b>			<u> </u>	<u> </u>
Depth (in.)	at Saturation Pct.	Able Na OAC CEC Pct.		Gypsum	to Clay	Sum Cations	NH _I OAA	c. d.	5-25% 5-25%	carbor carbor					٠,			
0-3 3-6	40.1 39.1	1			0.93 0.70	85	100 97											
6-12 12-21 21-31	55.9 45.9 43.0	1 4			0.73 0.66 0.74	<del>                                     </del>												
31-43	42.1	8	ļ		0.86		<b></b>	1										
43-56	39 . 3	11.		-	1.00		ł											
43-56 56-68	39.3 37.8	13	ļ	-	1.08	ļ		 										

Soil Type: Weld silt loam Soil Nos.: 8610010-3-7 Classification: Brown.

Construction: 2,162 feet south, 184 feet east of northwest corner, Sec. 16, T4S, R59W, Arapahoe County, Colorado. Climate: Continental, average annual precipitation 14 inches. Mean annual temperature 49° F.

Prost-free period 150 days. Elevation 5,100 feet.

Vegetation: Native pasture. Hue grama, sixweeks fescue, pricklypear. Some buffalograss and western wheatgrass. Rarent material: Aeolian Silty material - Loess.

Physiographic position: Upland.

· ...

Mysiographic Position: Uplant. Relief: Nearly level, 2 percent slope facing east. Breinage: Well drained, surface and internal. Intake rate is moderate. Moisture: Slightly moist to 18 inches, usually dry.

Stoniness: None. Water table: None.

Salt or alkali: Typical for B3cs to have a pH over 8.5, but no visible salts other than calcium carbonate. Brosion: Slight water erosion. Noderate wind erosion on west and north-facing slopes and crests of ridges.

Described by: J. B. Brown, June 28, 1961.

Borizon and Lincoln

Lab. No. 15533

O to 3 inches. Very dark grayish brown (10YR 3.5/2, moist) silt loam; grayish brown (10YR 5/2, dry) week medium subangular blocks breaking to moderate fine granules; soft when dry, very friable when moist;

field pH of 6.8; clear smooth boundary.

15534

3 to 6 inches. Very dark grayish brown (10YR 3.5/2, soist) silt loam; grayish brown (10YR 4.5/2, dry) moderate medium prisms breaking to moderate medium subangular blocks; slightly hard when dry, very friable when moist; many roots with thin patchy clay films in channels, and on lower part of ped surfaces; field pR 6.8; clear smooth boundary.

RPt. 15535 6 to 12 inches. Very dark grayish brown (10YR 3.5/2, moist) silty clay loam; dark grayish brown (10YR 4/2, dry) dark brown (10YR 4/3, moist and crushed) moderate fine prisms breaking to strong fine and very fine angular blocks; hard when dry, firm when moist; thin nearly continuous clay film on all peds; top inch of E2 horizon does not have prismatic structure, but the strong grade of very fine angular blocks;

slightly wavy boundary.

B3lca 15536

B32ca

12 to 21 inches. Grayish brown (1Y 5/2, moist) light silty clay loam; light brownish gray (1Y 6/2, dry) moderate medium prisms breaking to moderate medium fine angular and subangular blocks; hard when dry, friable when moist; thin patchy clay skins on peds; many roots and root holes, with many fine pores less than one millimeter in diameter; lime concretions are common medium and faint; violent effer vescence, with a field pH of 8.6; gradual smooth boundary.

21 to 31 inches. Gray brown (1Y 5/2, moist) heavy silt loam; light brownish gray (1Y 6/2, dry) weak HANDER OF STREET HANDERS AND STREET OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PRO

SOIL TYPE Weld LOCATION KIT CAMSON CO., COLO.

silt loam

SOIL NOS. S-54-Colo-32-1 LAB. NOS. 2554-2561

***************************************	1146972777444444	13	la	PARTI	CLE SIZ	E DISTRIB	UTION (in	ww.) (be		_3A1		) 
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURAL CLASS
		2.1	1-0.5	0.5-0.25	0.25-0.10	<b>0.</b> 10-0.05	0.05-0.002	< 0.002	0.2-0.02	Ø03-Ø003		
0-1½ 1½-3	All Al2	0.2a 0.1a	0.6 0.7	0.6	2.1	24.3 23.5	52.2 54.5	20.0 19.8	61.6 53.0	20.6	-	sil sil
3-5 5-11	A2B1 B21	0.1 0.2	0.9	0.7 0.5	0.6	25.3 25.4	53.3 47.4	18.6 25.4	60.9 53.8		•	sil l
11-17	B3cal		0.5	0.5	1.5	26.1	44.4	27.0	55.0		:	1/c1
17-23	B3ca2	-	0.5	0.3	1.2	28.4	43.1	26.5	55.5		•	1
23-33 33-45	Ccal Cca2	-	0.3 0.1	0.2	0.5	26.3 28.1	49.8 51.8	22.9 19.0	58.6 61.9		:	l sil
75-47	0000		0,1	0	<b>V.</b> 0	20.1	72.0	17.0	0,	10.0		511
	Hq.	90112411#1114	ORGA	MIC MA	TTER	8 <b>A</b> 2	ELECTRI-	6 <b>ELA</b>	25211-25 <b>0</b> 121 <b>01-74</b>		URE TE	
8сць	8 <b>Cla</b>	8cla	6Ala	6 <b>Bla</b>		ESTR SALT	CONDUC-		GYPSUM			4 <b>B</b> 2
PASTE	1:5	1:10	ORGANIC CARBON	MITRO- GEN	C/N	(BUREAU CUP)	EC×103 MILLIMHOS	equiv-	me./100g. 50ll	1/10 ATMOS.	1/3 ATMOS.	15 ATMOS.
			×	*			PER CM	75		*		5
7.1	.7.7	7.9	2.26	.185	12	-		_			-	10.5
6.8	7.3	7.4	_ :	.176	12	-		~-				11.3
6.4	7.0	7.1	1.33	.117 .112	11 10	-		1 2				9.4 12.0
7.4	8.3 8.7	8.5		.092	9	_		7				13.3
7.9	8.8	9.0	0.65	.071	9	-		11				13.3
7.9	8.9	9.1	0.38			-		11 9				11.8
7.9	8.9	9.0	0.23			-		7				10.6
5Ala	Pethyanacaburrade.	EXTRAC	TABLE (	CATIONS	5Bla	BASE			<u> </u>	8 <b>D</b> 3		A. 1411-1101-10000000000000000000000000000
CATION	6 <b>N2b</b>	602ь		6 ^P 2a	602a	SAT.			1	Ca/Mg		MOISTURE
APACITY	Co	Mg	н	No	ĸ	5D1			1			AT SATU- RATION
`ЙН4Ас.		milliaquiv	alones per	100g. sell	·	,					]	3
21.2 22.1	18.2 15.9	3.2 2.8		0.1 0.1	2.1 2.0	94				5•7 5•7		
18.1	12.8	2.3		0.1	1.2	91				5.6		
22.5 21.6		3.5		0.1	0.7						į	
20.7				0.2	1.1				İ		į	
20.1				0.2	1.6			1				
19.8				0.2	2.1							
8.	Organ	Lc Mat	ter in	Sand 1	Fracti	ons !	İ					
	, ,		i	•	t ·			•				

Soil Type: Weld silt loam Soil Nos.: 554Colo-32-1

Location: 100 feet east, and 25 feet west of southwest corner Sec. 13, TLOS, R43W, Kit Carson County, Colorado. Hysiographic Position: Upland.

Topography: A very gentle convex slope of approximately 2 percent facing northeast. Brainage: Well drained.

Vegetation: Chiefly blue grama, western wheat and buffalograss.

Hae: Basture.

Sampled by: James Allen, E. M. Fayne, Dale Romine, A. J. Cline, September 2, 1954.

Described by: E. M. Payne.

Horizon and Lincoln Lab. Number

Cox1 2560

Ccs2 2561

O to la inches. Orayish brown (10YR 5/2.5 dry) to very dark grayish brown (10YR 3/2 moist) silt loam; All. soft when dry, very friable when moist; moderate fine platy, breaking to moderate fine crumb structure; 2554

noncalcareous: lower boundary clear and smooth.

late 3 inches. Gray (10YR 5/1 dry) to very dark gray (10YR 3/1 moist) silt loam; slightly hard (dry), very friable (moist); weak very coarse platy, breaking to moderate coarse granular; noncalcareous; 419 2555

lower boundary clear and smooth.

3 to 5 inches. Pale brown (10YR 6/2.5 dry) to dark grayish brown (10YR 3.5/2 moist) silt losm; hard (dry), friable (moist); weak coarse subangular blocky structure; noncalcareous; lower boundary abrupt and smooth; there is some gray flecking on the sides of the aggregates in this horizon. 42R1 2556

5 to 11 inches. Grayish brown (10YR 5/2 dry) to very dark grayish brown (10YR 3/2 moist) light silty clay losm; hard (dry), friable (moist); strong medium prismatic; breaking to strong medium angular blocky; noncalcareous; a few thin but distinct Tonhautchen; lower boundary is abrupt and smooth. B21 2557

11 to 17 inches. Light gray (10YR 7/2 dry) to grayish brown (10YR 5/2.5 moist) light silty clay losm:

calcareous; the horizon contains a few small line mycelia; the lower boundary is gradual and smooth.

17 to 23 inches. Very pale brown (10YR 7/3 dry) to pale brown (10YR 6/3 moist) silt loam; hard (dry), B3ca2 friable (moist); weak coarse prismatic to weak coarse subangular blocky; calcareous; the horizon contains slight to moderate amounts of accumulated lime chiefly as lime flour but segregated into a 2559 few lime mycelia; lower boundary gradual and smooth.

23 to 33 inches. Very pale brown (10YR 8/3 dry) to pale brown (10YR 6/3 moist) silt losm; hard (dry), very friable (moist); massive; calcareous; the horizon contains moderate amounts of accumulated lime

33 to 45 inches. Very pale brown (10YR 8/3 dry) to pale brown (10YR 6/3 moist) silt loam; slightly hard (dry), very friable (moist); massive; calcareous; the horizon contains moderate amounts of accumulated lime chiefly as lime flour.

SOIL TYPE Weld LOCATION KIT CARSON CO., COLO.

silt loam

**SOIL NOS.** S-54-Colo-32-2: **LAB. NOS.** 2562-2569

	******	1.B1	<u> </u>	PARTI	CLE SIZ	E DISTRIE	UTION (In	mar.) (20	er cent)	3A1		.j. <del></del>
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURA CLASS
		2-1	1-0.5	0.5-0,25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002		<u>.</u>
0-2	Al	0.3ª	0.9	0.9	2.0	35,6	39.2	21.1	63.5	12.6	_	1
23-5	A2	***	1.0	0.7	1.8	31.1	49.7	15.7	65.8	16.2	-	1
5-9 <del>2</del>	B21	-	0.5	0.4	1.0	19.9	37.2	41.0	45.5	12.3	_	c
92-14	B22		0.5	0.4	1.0	21.9	36.6	39.6	47.2	12.0		cl.
14-18	B3cal	-	0.1	0.1	1.1	31.1	40.1	27.5	56.9	15.2	-	cl
18-25	E3ce2	-	0.1	0.1	0.6	30.9	49.0	19.3	61.0	19.4	_	1
25-33	Ccal		0.1	0.1	0.5	37.1	46.2	1.6.0	67.8	15.9	-	1
33–43	Cca2	-	0.9	0.6	8.0	45.2	<b>36.</b> 9	15.6	71.6	11.1	-	1
			6869893232321000000					***************************************	***************************************	***************	***************************************	
2201	pH 8Cla	8Cla		MIC MA	TIER	8A2	ELECTRI- CAL CONDUC-	6Ela		MOIST	URE TE	NZIONZ
SCIP SYLD	OCTE	OCTW	. 6Ala Organic	6Bla		EST% SALT (BUREAU CUP)	TIVITY EC-103	C+CO3	GYPSUM	1/10	1/3	4B2
PASTE	. <b>1:5</b>	1:10	CARBON	GEH	C/N	CUP)	MILLIMHOS	equiv-	SOIL	ATMOS.	ATMOS,	ATMOS.
			*	•			PER CM	T.		R	*	*
6.9	7.5	7.6	1.22	.128	10			_				9.7
6.7	7.5	7.6	1.13	.096	12	~		<b>-</b>				7.1
6.3	7.2	7.3	1.11	.098	ii	_		_	į			16.8
7.3	8.2	8.4	0.77	.097	8	-		_	İ		•	17.1
8.0	9.1	9.2	0.57	.048	12			8				13.4
8.2	9.3	9.5	0.32	.036	9			12				11.4
8.2	9.3	9.5	0.18					10				9.5
8.1	9.3	9.5	0.12					7				7.8
	100Metaphrone 10		TABLE		CYO -		***************************************			0		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
5Ala CATION	6#2ь	602ь	IABLE	6P2a		SAT.				8D3 Ca/Mg		MOISTUR
CATION XCHANGE CAPACITY	Co	Me	н	No.	K	5DL				Ca/Mg		SATU- RATIO
MULAC		millioquiv	i elome per	) 100g. sol	·							**************************************
NHAAC				1								
19.2	13.9	I	į	0.1	2.0	0.0			i	3.5		į
13.8	9.2	2.8	•	0.1	1.4	98	1			3.3		l
29.2	17.9			0.2	2.1	94	•			2.4		1
30.1	19.3	9.2	İ	0.6	2.2				1	2.1		1
22.3		Ì	•	0.7	1.7		1		l	ì		1
19.0		l	l	1.2	2.0		ļ .	Į Į	į	ļ		1
21.0		•	l	1.6	2.0 1.8		1	Ĭ	l	1		Ī
15.3				1.8	1.0					İ		
a Org	anic N	atter	in Sar	d Fra	tions						ĺ	
	I	ļ	1					į	Į		İ	[
,	1	j	Ī	ł		l	1	ļ		1	l	İ

Soil Type: Weld silt loam

Soil Nos.: S540010-32-2 Location: 1/4 mile west, 125 feet south of northeast corner of Sec. 32, TBS, R46W, Kit Carson County, Colorado. Thysiographic Fosition: Upland.

Topography: Gentle convex slope of approximately 2 percent facing east.

Drainage: Well drained.

Vegetation: Predominantly blue grams with some buffalo, western wheat, threadgrass.

Use: Pasture.

Sampled by: James Allen, Dale Romine, E. M. Payne, and A. J. Cline, September 1, 1954.

Described by: R. M. Payne.

Horizon and Lincoln lab. Rumber

0 to 2 inches. Grayish brown (10YR 5/2.5 dry) to dark grayish brown (10YR 4/2 moist) silt loam; soft 2562 (dry) very friable (moist); moderate coarse platy, breaking to moderate coarse crumb structure; noncalcareous; lower boundary clear and smooth.

22 to 5 inches. Light brownish gray (10YR 6/2.5 dry) to dark grayish brown (10YR 3.5/2 moist) silt loam; slightly hard (dry), very friable (moist); weak coarse columnar, breaking to weak medium sub-angular blocky; noncalcareous; tops of the columns are slightly rounded and have an indistinct platy 2563 structure that is confined to the top 1/4 to 1/2 inch; lower boundary abrupt and smooth.

5 to 9½ inches. Brown (10YR 4.5/3 dry) to dark brown (10YR 3.5/3 moist) heavy silty clay loam; very hard (dry) firm (moist); strong fine prismatic structure, breaking to strong fine angular blocky; non-calcareous; moderately thick distinct Tonhautchen; lower boundary clear and smooth. 121 2564

9½ to 14 inches. Bark grayish brown (10YN 4/2 dry) to very dark grayish brown (10YR 3/2 moist) heavy 2565 silty clay loss; very hard (dry), firm (moist); strong medium prismatic, breaking to strong medium angular blocky; noncalcareous; moderatley thick distinct fonhautchen; lower boundary abrupt and smooth.

B3cal 2566 14 to 18 inches. Rale brown (10YR 6/3 dry) to brown (10YR 5/3 moist); light silty clay losm; very hard (dry), firm (moist); moderate coarse prismatic, breaking to moderate coarse angular blocky; calcareous; the horizon contains a few small calcium carbonate concretions and mycelia; Tonhautchen are faintly visible under a hand lens, but are very thin and patchy; lower boundary is gradual and smooth.

18 to 25 inches. White (10YR 8/2 dry) to light yellowish brown (10YR 6/3.5 moist) silt loam; hard (dry), friable (moist); weak coarse subangular blocky structure; calcareous; the horizon contains moderate amounts of accumulated line both as line flour and as mycelia; lower boundary gradual and smooth. B3ca2 2567

25 to 33 inches. Wery pale brown (10YR 8/3 dry) to pale brown (10YR 6/3 moist) silt losm; hard (dry), frieble (moist); massive; calcareous; the horizons contain much accumulated lime chiefly as lime Conl 2568 flour: lower boundary is gradual and smooth.

Coa2 33 to 43 inches. Very pale brown (10TR 8/3 dry) to pale brown (10TR 6/3 moist) silt losm; slightly hard (dry), very friable (moist); massive; calcarcous; the horizon contains moderate amounts of accountated calcium carbonate chiefly as lime flour. 2569

SOIL TYPE * Weldona LOCATION Morgan County, Coloredo sandy loam

SOIL NOS. 559Colo-44-5 LAB. NOS. 10858-10863

	1		Bla	PARTI	CLE-SIZ	E DISTRIB	UTION (in	mm.) (pe	r cent)	3A1		
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURAI CLASS
		2-1	1-0.5	0,5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.0 <b>0</b> 2	(<19m	<b>1</b>
0-6 6-15 15-21 21-31 31-45 45-62	Ap B2t B3 C1 C2 C3		13.8 20.7 25.5 24.5 22.4 26.9	11.8 11.8 15.1 20.5 23.5 17.8	16.4 14.6 17.1 23.4 26.6 20.9	12.1 6.2 4.3 6.0 6.1 5.3	28.7 12.3 7.7 8.0 6.6 6.3	9.9 19.6 12.6 11.6 8.6 8.8	37.7 19.0	10.5 6.1 5.2 5.1 4.1 4.1	Tr.	sl cosl/sc cosl cosl lcos lcos
	pH			NIC MA		1884   11989991 s , 448BL301	ELECTRI-	бкіа	######################################	MOIST	URE TE	NSIONS
3Cla 1:1	1;5		6Ala Organic Careon	NITRO-	C/N	EST% SALT (BUREAU CUP)	CONDUC- TIVITY EC - 103 MILLIMHOS PER CM	CaCO3 equiv- cient	GYPSUM me,/100g. SOIL	1/10 ATMOS. %	1/3 ATMOS. %	4B2 15 atmos. %
7.2 6.9 7.6 7.6 8.5			0.55 0.38 0.22 0.14 0.05 0.03	0.052 0.043 0.028 0.014	9			00000				4.3 7.6 4.7 4.5 3.2 3.2
FALA CATION X HANGE APACITY NH _{II} AC	6№2b <b>c</b> •	EXTRAC 602b Mg	TABLE 6HLa H	6P2a No	5Bla 692a K	BASE SAT. NHI AC EXCH.	Base Sat. % on Sum Cations 5C3	ł	Sum Ext.		O. D. Bulk Densit	MOISTURE ATU- SATU- RATION
7.1 12.7 9.2 9.2 7.0 6.7	4.7 10.1 7.5 7.6 9.8 8.6	1.4 3.2 2.5 2.6 2.2 2.1	1.4 1.7 1.0 0.7 <0.1	<pre>&lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 </pre>	1.3 0.5 0.2 0.2 0.2	104 109 111 113 174 164	84 89 91 94 100	7.4 13.8 10.2 10.4 12.2 11.0	8.8 15.5 11.2 11.1 12.2 11.0	3.4 3.0 2.9 4.4 4.1		
								1 1 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1		parken er er er er er er er er er er er er er	**************************************	e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de l

Soil Type: *Weldona sandy loam Soil Nos.: S59Colo-44-5

Field classification: Chestnut.

Iocation: 250 feet east, 1,050 feet north of southwest corner, Sec. 31, T3N, R59W, Morgan County, Colorado. Photo: YE-7F-10.

Climate: Continental, average annual precipitation 15-17 inches; frost-free season 146 days, mean annual temperature

48° F. Elevation 4,630 feet. Vegetation: Dry cropland fallow. Parent material: Arkosic alluvium.

Physiographic position: Terrace.
Relief: Nearly level 0-1 percent slope.

Drainage: Slow external, medium internal.
Moisture: Moist to 56 inches at time of sampling.

Water table: None or very deep. Stoniness: Few small gravels. Salt or alkali: None observed.

Erosion: Slight to moderate wind, estimate 2 to 3 inches surface horizon lost. Has been under cultivation 12 to

15 years, 2 years idle because of drought.

Described by: Clayton F. Spears, May 5, 1959.

Remarks: Numerous small krotovinas in B2, B3, and C1 horizons. Two dark brown charcoal strips about 1/4 inch thick at 33 inches and 42 inches which ran in smooth continuous lines across pit areas.

Horizon and Idncoln Lab. No.

O to 6 inches. Crayish brown (10YR 5.5/2 dry) to dark brown (10YR 3/3 moist) very dark grayish brown (10YR 3/2 crushed) sandy loam; weak fine granular structure; slightly hard when dry, friable moist; noncalcareous; the 5-to 6-inch layer shows some weak fine platy structure probably due to tillage; Ap 10858 lower boundary clear and smooth.

6 to 15 inches. Brown (8.75YR 5/3 dry) to dark brown (7.5YR 3/2 moist) brown (7.5YR 4/3 crushed) sandy B2t clay loam; moderate medium prismatic structure breaking to moderate medium subangular blocks; hard to 10859 very hard dry, friable when moist; moderate nearly continuous clay skins on vertical and horizontal faces of soil aggregates; noncalcareous; lower boundary clear and smooth.

brown (1.25Y 5/4 dry) to olive brown (1.25Y 4/3 moist and crushed) 15 to 21 inches. Light olive B3 10860 coarse sandy loam; weak coarse subangular blocky structure; hard when dry, friable moist; very thin patchy clay skins on vertical faces of soil aggregates; noncalcareous; lower boundary clear and wavy.

21 to 31 inches. Light olive brown (2.5Y 5.5/4 dry) to olive brown (2.5Y 4.5/3 moist and crushed) loamy coarse sand; massive; slightly hard when dry, friable moist; noncalcareous; lower boundary 10861 clear and wavv.

31 to 45 inches. Light yellowish brown (2.5% 6/3 dry) to light olive brown (2.5% 5/3 moist and crushed) coarse sand; massive; noncelcareous; very dark brown (10YR 2/2) charcoal strips approximately 1/4 inch thick at 33 inches and 42 inches in this horizon. Lower boundary gradual and smooth. 10862

45 to 62 inches. Hight yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist and crushed) sand, massive; noncalcarsous; lower boundary clear and smooth. 03 10863

62 to 70 inches. Light yellowish brown (2.5Y 6/4 dry) to light olive brown (2.5Y 5/4 moist) sandy clay CŽ. loam; massive; hard dry, friable moist; noncalcareous; lower boundary clear and smooth.

70 to 108 inches. Pale yellow to light yellowish brown (2.5Y 6.5/3 dry) to light olive brown (2.5Y 5/3 CS moist) coarse sand and sand stratified; massive, soft dry, friable moist; noncalcareous.

### Bureau of Public Roads samples:

0-6 inches Aπ

6-15 inches B2t

œ 31-45 inches

ADDITIONAL NOTES: There are a few thin seams of clayey material and a few small clay balls in the C3 and C4 horizons.

SOIL TYPE * Weldona LOCATION Morgan County, Colorado sandy loam

SOIL NOS. S59Colo-44-6 LAB. NOS. 10864-10871

1005-410141-1141BE		IE	la	PARTI	CLE SIZ	E DISTRIB	UTION (in	mm.) (pe	r cent)	ŢĀĘ	04441111410014101	****************
DEPTH INCHES	HORIZON	VERY COARSE SAND	COARSE SALID	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > ²	TEXTURA CLASS
	<b></b>	2-1	1-0.5	0,5-0,25	a. 25-a. 10	0.10-0.05	0.05-0.002	< 0.062	0.2-0.02	<b>0</b> 02-0602	(<19 ₉₉₉	.)
0-8 8-12	Ap B21t	7.5 9.2	9.1 11.5	6.2 7.6	12.6 13.8	15.4 11.5	36.0 28.0	13.2 18.4	44.9 37.1	13.0 9.1	Tr. 2	l fsl
12-18	B22t	10.2	12.2	7.6	12.6	10.1	23.0	24.3	30.8	8.1	Tr.	scl
18-25	B3	19.2	27.3	13.3	16.4	6.2	7.4	10.2	17.5	3.3	10	lcos
25-31 31-35	C1 C2	8.0 15.5	14.7 24.3	14.6 15.7	28.8 19.0	12.0 7.0	10.4 8.0	11.5 10.5	32.1 19.9	4.6 3.5	Tr. Tr.	sl lcos
35-40	C3	9.9	30.0	18.0	19.5	5.9	7.2	9.5	18.2	2.9	Tr.	lcos
40-57	C4	13.4	22.6	15.3	21.4	8.7	9.6	9.0	23.4	4.6	6	leos
**********	ьH			INIC MA		\$8\$89 <b>\$\$</b> \$\$ <b>\$</b> \$\$\$\$\$	ELECTRI-		anti tandida 14++44		URE TE	
Cla	P/7	i	6Ala			EST%	CAL CONDUC-	6E1a	CADGIIII			
OLA	1:5	1:10	ORGANIC CARBON	NITRO-	C/N	SALT (BUREAU CUP)	TIVITY EC = 103 MILLIMHOS	equiv-	GYPSUM me./100g. SOIL	1/10 ATMOS.	1/3 ATMO <b>S</b> ,	4132 ATMOS
1:1	,,,,		%	%	- "	55.,	PER CM	%		76	8	%
7.1		i	0.54	0.058				a				5.5
7.3			0.43	0.051	8		; ;	d				8.2
7•5 7.8			0.41	0.053 0.018	•		• •	44				10.5 3.9
7.8		į	0.20	0.010				a				4.8
8.2	į	1	0.13				ļ	<b>Q</b>				3.9 3.4
8.4 8.5			0.08		ļ			ì				2.6
		******		} 	) 1040-1010-01010-1-1			<b>(</b> ************************************			<b></b>	- 
5Ala		EXTRAC	TABLE	CATIONS		BASE SAT.	Base	Same	Sum	Ca/Mg	I	MCISTU!
CATION YCHANGE APACITY	6N2b	602ъ	6НДа. н	6P2a No	692a	NH) Ac	Sat. % on Sum	Ext. Bases	Ext.		O. D. Bulk	SATU-
MH ₁₄ Ac	Ca	Mg malliequiv	olents per	1	1	EXCH. 5Cl	Cations 5C3	5Bla	ions 5A3a	8103	Densit	RATIO
	<i></i>	1		i			83		11.4	1	P7.75	<del>-</del> -
8.9 11.9	6.9	1.8	1.9	0.1	0.7	107 115	89	9.5	15.4	3.5		
2.6.3	12.7	4.0	1.5	0.8	0.6	111	92	18.1	19.6	3.2		
8.1	6.1	2.2	0.2	0.4	0.2	110	98 94	8.9	9.1			
10.2 9.0	8.1	2.3	0.7	0.5	0.3	1110	7**	11.2	1	J•7		
7.8		2.7	<0.1	0.3	0.2							
7.0		į	į	0.2	0.2			1	ł.	}		
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Soil Type: *Weldona sandy loam Soil Nos.: S590olo-44-6 Weld Classification: Chestnut.

Location: 75 feet east, 170 feet south of the north quarter corner, Sec. 23, TIN, R60W, Morgan County, Colorado. Photo: YE-5F-38.

Climate: Continental, average annual precipitation 15-17 inches, frost-free season 146 days, mean annual temperature 48° F, elevation 4,730 feet.

Vegetation: Dry cropland fallow.

Parent material: Arkosic alluvium. Physiographic position: Terrace.

Relief: Mearly level 0-1 percent slope.

Drainage: Slow external, moderate or medium internal. Moisture: Moist to 56 inches at time of sampling.

Water table. None or very deep.

Stoniness: Few small water-worn gravels throughout profile.

Brosion: Slight to moderate wind.

Described by: Clayton F. Spears, May 6, 1959.

marks: Has been under cultivation less than 10 years. Mumerous small krotovinas in H2, H3 horizons.

Horizon and Lincoln Lab. No.

0 to 8 inches. Grayish brown to brown (10YR 5/2.5 dry) to dark brown (10YR 3/3 moist and crushed) AD 1086k sandy loam; weak fine crumb structure; soft when dry, very friable moist; noncalcareous; lower boundary clear and smooth.

8 to 12 inches. Brown (10YR 5/3 dry) to dark brown (8.75YR 3/3 moist) (10YR 3/3 crushed) sandy clay losm; moderate medium prismatic structure breaking to moderate medium subangular blocks; hard when B21t 10865 dry, friable when moist; moderate nearly continuous clay skins on both vertical and horizontal faces of soil aggregates; noncalcareous; lower boundary clear and wavy.

12 to 18 inches. Dark grayish brown (10YR 4/2 dry) to very dark grayish brown (10YR 3/2 moist) (10YR 102t 3.5/2 crushed) sandy clay losm; moderate medium prismatic structure breaking to moderate medium subangular blocks; hard to very hard when dry, friable moist; moderate continuous clay skins on both vertical and horizontal faces of soil aggregates; noncalcareous; lower boundary clear and wavy. 10866

18 to 25 inches. Light yellowish brown (1.25Y 6/3 dry) to olive brown (1.25Y 4/3 moist and crushed) thin patchy clay skins on vertical faces of soil aggregates and in root channels; noncalcareous; 10867 lower boundary clear and smooth.

25 to 31 inches. Hight yellowish brown (1.25Y 6/3 dry) to light olive brown (1.25Y 5/3 moist) sandy loss; massive; slightly hard dry, friable moist; noncalcareous; lower boundary clear and smooth. 10868

31 to 35 inches.

10869

31 to 32½ inches. Light yellowish brown (1.25Y 6/3 dry) to light clive brown (1.25Y 5.5/3 moist) coarse C21 sand, massive; strongly calcareous.

C22 32 to 332 inches. Grayish brown (2.57 5/2 dry) to dark grayish brown (2.57 4/2 moist) sandy clay losm; massive; slightly hard dry, friable moist; this horizon contains a charcoal strip 1/4 inch wide which is very dark brown (10YR 2/2 moist); strongly calcareous.

C23 33½ to 35 inches. Hight yellowish brown (2.5Y 6/3 dry) to light olive brown (2.5Y 5/3 moist) losmy coarse sand; massive; slightly hard dry, very friable moist; slightly calcareous; lower boundary clear

35 to 40 inches. Fale yellow (2.5Y 6.5/3 dry) to light olive brown (2.5Y 5.5/3 moist) losmy sand; 03 10870 massive, slightly hard dry, friable moist; this horizon is calcareous with calcium carbonate occurring in the form of thin seems and small soft concretions but at least 50 percent of material in this horizon is noncalcareous. It is not a horizon of lime accumulation; lower boundary clear and smooth.

40 to 57 inches. Pale yellow (2.5Y 6.5/3 dry) to light clive brown (2.5Y 5.5/3 moist) coarse sand; 10871 massive, soft dry, frishle moist; very slightly calcareous in places, but no visible seems or concretions of calcium carbonate can be noted; lower boundary clear and smooth.

C5 57 to 61 inches. Light brownish gray (10YR 6.5/2 dry) to grayish brown (10YR 4.5/2 moist) sandy loam; massive; soft dry, friable moist; very slightly calcareous in spots; lower boundary gradual and smooth.

06 61 to 83 inches. Fale yellow to light yellowish brown (2.5Y 6.5/3 dry) to light clive brown (2.5Y 5.5/3 moist) coarse mind; massive; dry soft, moist friable; noncalcareous; lower boundary clear and smooth.

83 to 90 inches. Pale yellow to light yellowish brown (2.5Y 6.5/3 dry) to light olive brown (2.5Y 5/3 moist) stratified loamy sand, sand, and sandy loam; massive: soft dry, friable moist; few medium distinct mottles of bright yellowish brown (10YR 5/6 5/8 moist or dry); noncalcareous; lower boundary gradual Ç7 and smooth.

œ 90 to 108 inches. Light yellowish brown (2.5% 6/3 dry) to light olive brown (2.5% 5/3 moist) lowey coarse sand, massive; noncalcareous; few medium mottles of bright yellowish brown (10YR 5/6 5/8 moist

or dry).

Bureau of Public Roads Samples: Ap 0-8 inches; E22: 12-18 inches; C4 40-57 inches.

ADDITIONAL NOTES: Both the C3 (35-40 inches) and the C4 (40-57 inches) horizons contained a few thin seems of clayer material and a few small clay balls.

SOIL	SURVEY	LABORATORY	Lincoln, Nebr.	May, 1959
3016				

SOIL TYPE Wiley LOCATION Prowers County, Colorado silt loam

SOIL NOS. <u>\$580010-50-8</u> LAB NOS. <u>9706-9711</u>

			Bla				UTION (in			maininininininininininininininininininin	*****************	**************************************
DEPTH INCHES	HORIZON	VERY		MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY			2A2 > 2	TEXTURAI CLASS
		2-1	1-0.5	0.5-0.25	0. 25-0. 10	0.10-0.05	0.05-0.002	< 0.002	0.2-0,02	Q02-Q002		
0-4 4-10	Ap B21t	<0.1 0.1	0.2 0.1	0.3 0.2a		19.9 14.4a	55.5 57.5	22.6 26.6	53.5	15.7 19.3		sil sil/sic
10-17 17-29 29-41	B22t B3ca Cl	0.1 <0.1 <0.1	0.1 0.1 0.1	0.la 0.la 0.la	0.5a	8.4a	62.2 65.8 66.1	27.0 25.1 23.3	51.0 50.0 52.0	21.5 24.6 24.4	- -	sicl/si sil sil
41-60	C5	₹0.1	0.1	0.la				20.8	54.5	24.3	-	sil
	иничения РН	.}// <b>64903</b> /3 <b>t</b> 1/52*0		NIC MA		8 <b>A</b> 2	ELECTRI-	быа			URE TE	NSIONS
8Cla	1:5	1:10	6 <b>Ala</b> ORGANIC CARBON	6Bla NITRO- GEN	C/N	EST% SALT (BUREAU CUP)	CAL CONDUC- TIVITY EC×103 MILLIMHOS PER CM	CcCO3 equiv- clent	GYPSUM me./100g, SOIL	1/10 ATMOS.	1/3 ATMOS.	4 <u>P2</u> 15 ATMOS.
1:1			%	%	• <del>•</del>		PEA CM			%		%
7.8 7.9 7.9			0.98 0.78 0.52	0.108 0.088 0.062	9 9 8	<0.20 <0.20 <0.20	0.7 0.6 0.7	2 7 9				10.1 11.6 11.5
8.2 8.6			0.33 0.22	0.040	8	<0.20 <0.20	1.0 0.9	9 9 8				10.9 11.3
8.5			0.18			<0.20	2.2	6	a			10.8
5Ala			TABLE	CATIONS	5Bla	5 <b>D</b> 2	8A1SATU	RATION	EXTRAC	T SOLU	3LE	8a
CATION EXCHANGE TAPACITY NHLAC	Co	kig	H	6P2a, No	6Q2a. к	EXCH. No	6Pla No	6Q1a K				MOISTURE AT SATU- RATION
		milliequiv	alents per	100g, soi!	<del></del>	- 3	<del></del>	millioqu :	ivalents p	or liter ——		%
18.7 18.7				<0.1 0.1	0.8		0.4 0.5 1.4	0.7 0.3 0.3				53.2 58.9 58.3
18.6 18.8 <b>1</b> 8.7				0.3 1.6 3.1	0.7 0.7 0.7	7 14	5.4 6.8	0.2		v m m m m m m m m m m m m m m m m m m m		58.0 55.9
19.2				4.5	0.6	19	16.6	0.1		-		54.1
					# # # # # # # # # # # # # # # # # # #							
										***************************************		
a. Tra	e CaC	)3 <b>c</b> on	gr.									

Soil Type: Wiley silt loam Soil Nos.: S58Colo-50-8 Classification: Sierozem.

Climate: Continental climate, average annual precipitation 13 to 14 inches, elevation 3,840 feet. Frost-free season

166 days. Vegetation: Sorghum.

Parent Material: Loess.
Physiographic Position: Upland.

Stoniness: None. Water Table: None encountered. Salt or Alkali: None observed.

Relief: Gently sloping, 2 to 3 percent slope.

Drainage: Well.
Moisture: Dry.
Erosion: Slight to moderate, principally wind.
Described by: E. Milton Payne, November 6, 1958.

Horizon and <u>Lincoln</u> Lab. No.

0 to 4 inches. Grayish brown (LOYR 5.5/2 dry) to dark grayish brown (LOYR 3.5/2 moist) silt loam; Аф 9706 weak coarse platy breaking to weak fine granular; hard when dry, friable when moist; slightly effervescent; clear smooth boundary.

R21t. 4 to 10 inches. Grayish brown (10YR 5.5/2 dry) to dark grayish brown (10YR 4/2 moist) silty clay 9707 loam; weak coarse prismatic breaking to moderate medium subangular blocky structure; hard when dry, friable when moist; thin patchy clay skins; strongly effervescent; gradual smooth boundary.

R22t. 10 to 17 inches. Pale brown (10YR 6/3 dry) to brown (10YR 4.5/2.5 moist) silty clay loam; weak medium 9708 prismatic breaking to moderate medium subangular blocky structure; hard when dry to firm when moist; very thin nearly continuous clay skins; violently effervescent with a few scattered lime spots; gradual smooth boundary.

17 to 29 inches. Pale brown (10YR 6/3 dry) to brown (10YR 4.5/3 moist) silty clay loam; weak medium ВЗса prismatic breaking to weak medium to coarse subangular blocky structure; hard when dry, firm when 9709 moist; thin patchy clay skins; violently effervescent with numerous lime spots; clear smooth boundary.

29 to 41 inches. Very pale brown (LOYR 7/3 dry) to brown (LOYR 5/3 moist) light silty clay loam; weak coarse subangular blocky structure; hard when dry, friable when moist; violently effervescent; gradual C1 9710 smooth boundary.

41 to 60 inches. Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) silt loam; very weak coarse subangular blocky structure; slightly hard when dry, very friable when moist; violently effervescent; 9711

60 to 90 inches. Very pale brown (10YR 7/3.5 dry) to yellowish brown (10YR 5/3.5 moist) silt loam; C3 massive; slightly hard when dry, very friable when moist; violently effervescent.

 $\mathbf{m}$ 90 to 105 inches. Light brown (7.5YR 6.5/4 dry) to brown (7.5YR 5/4 moist) silt loam; massive; slightly hard when dry, very friable when moist; violently efferwescent.

105 inches plus. Pink (7.5YR 7/5 dry) to brown (7.5YR 5/5 moist) light silty clay loam; massive; slightly hard when dry, very friable when moist; violently effervescent with some salt and lime spots.

### Bureau of Public Roads Samples:

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0 to 4 inches 10 to 17 inches P22 41 to 60 inches.

	SOIL SURVEY LABORATORY Lincoln, Nebr. May, 1959
	SOIL TYPE Wiley LOCATION Provers County, Colorado silt loam
	SOIL NOS. S58Colo-50-9 LAB. NOS. 9712-9717
	TEXTURAL CLASS HORIZON COARSE MEDIUM FINE FINE FINE FINE FINE FINE FINE FINE
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Soil Type: Wiley silt loam Classification: Sierozem

Location: 50 ft. E, 600 ft. N of center of Sec. 17, T24S, R45W, Prowers County, Colorado.

Date Sampled: November 6, 1958

Climate: Continental climate, average annual precipitation 13 - 1h inches, elevation 3,860 feet. Frost free season 166 days.

Vegetation: Fallow. Parent Material: Loess. Physiographic position: Upland. Relief: Gently sloping, 2% north facing slope. Drainage: Well Moisture: Slightly moist. Watertable: None encountered. Stoniness: None. Salt or alkali: None observed. Erosion: Moderate. primarily wind.

Sait or alkali: None observed. Erosion: Moderate, primarily wind Soil Nos. S-58-Colo-50-9

Described by: E. Milton Payne.

Lincoln Horizon

Lab. No.

9712 Ap 0-5 Grayish brown (10YR 5.5/2 dry) to dark grayish brown (10YR 3.5/2 moist) silt loam; weak coarse platy structure breaking to weak medium granular; slightly hard dry, friable moist; strongly calcareous; clear smmoth boundary.

9713 B_{2lt} 5-13 Light grayish brown (1018 6.5/2 dry) to dark grayish brown (1018 6.5/2 dry) to dark grayish brown (1018 6.5/2 dry) to dark grayish brown (1018 6.5/2 dry) to dark grayish brown (1018 6.5/2 dry) to dark grayish brown dry, frishle moist; thin nearly continuous clay skins, strongly calcareous; gradual wavy boundary.

971h B_{22t} 13-23 Light grayish brown (10YR 6.5/2 dry) to grayish brown (10YR 5/2.5 moist) silty clay loam; weak coarse prismatic structure; breaking to weak medium subangular blocky; thin patchy clay skins; violently calcareous with a few scattered lime spots; gradual wavy boundary.

Pale brown (10YR 6.5/3 dry) to brown (10YR 5/3 moist) silty inches clay leam; very weak coarse subangular blocky structure; hard when dry, friable moist; clay skins found in worm and root channels; violently calcareous with very few lime spots; clear smooth boundary.

9716 C₁ 33-43 Pale brown (10YR 6.5/3 dry) to brown (10YR 5/3 moist) light silty clay loam; very weak coarse subangular blocky structure; slightly hard when dry, friable moist; violently calcareous; clear smooth boundary.

9717 C₂ 43-61 Very pale brown (10YR 7/2.5 dry) to brown (10YR 6/3 moist) inches silt loam; massive; slightly hard when dry, very friable moist; violently calcareous; gradual smooth boundary.

C₃ 61-97 Very pale brown (10YR 7/3 dry) to brown (10YR 5/3 moist) inches silt loam; massive; slightly hard when dry, very friable moist; violently calcareous.

97-116 Very pale brown to pink (SYR 7/4 dry) to yellowish brown inches (SYR 5/4 moist) light silty clay loam; massive; slightly hard when dry, friable moist; violently calcareous.

Bureau of Public Roads Samples

Ap 0-5 inches; B21 5-13 inches; C2 43-61 inches.

# **COLORADO**

